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Studia Nostratica, 1

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*Allan R. Bomhard*

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# **Indo-European and the Nostratic Hypothesis**

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*I would like to dedicate this book to the memory of my parents,  
Charles and Claudia Gardner.*



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## Preface

This book has a history. In early 1994, Ken Jacobs, Department of Anthropology, University of Montreal, invited me to deliver a paper at a session on “Language, Culture, and Biology in Prehistoric Central Eurasia: (Re-)establishing the Links” at the 1994 annual meeting of the American Anthropological Association to be held in Atlanta, GA, in December of that year. Jacobs charged participants to move beyond their specialties and interests and to approach the issues from a multidisciplinary perspective. Other participants included well-known linguists and anthropologists. The original title I selected for my paper was “Archeology and the Nostratic Hypothesis”.

Then, later on in that year, Kevin Tuite, a colleague of Jacobs, invited me to deliver a paper covering much the same topics before faculty members and students of the Department of Anthropology, University of Montreal, which I did on 20 October 1994. By then, I had changed the title to “Indo-European and the Nostratic Hypothesis”. Reaction to the paper was enthusiastic, and a lively discussion ensued, with many valuable comments being received from Marc Picard, Étienne Tiffou, Kevin Tuite, and others in attendance.

As time went on, I kept adding new material to the paper, which, as a result, grew to over 80 typed pages by the time I reached Atlanta.

When I was in Montreal in October 1994, Kevin Tuite suggested to me that it might be valuable to have a book on Nostratic that was aimed at a more general audience than my 1994 co-authored book *The Nostratic Macrofamily: A Study in Distant Linguistic Relationship*. He wanted a book that he could use in his classes — most of his students are anthropology majors. I liked Tuite’s suggestion. The paper that I delivered first in Montreal and then in Atlanta seemed like a good place to start. Not only did it contain a summary of much that was in my 1994 book, but it also contained, thanks to Jacobs, a long discussion of homelands, which, by its very nature, incorporated a great deal of information derived from archeology and anthropology. Over the next few months, I reworked the paper, dividing it into chapters and adding much new material.

Then, in mid-1995, Joseph Greenberg sent me a draft of the manuscript for the volume on morphology of his forthcoming two-volume work *Indo-European and Its Closest Relatives: The Eurasiatic Language Family*. I learned much from it and revised the manuscript of my book accordingly.

In the course of working on the book, valuable comments were received from Hal Fleming and, especially, Igor M. Diakonoff. I owe them many thanks. Finally, Alexis Manaster Ramer engaged me in a challenging e-mail debate on Nostratic in December 1995. As a result of this debate, additional refinements were made.

It is with great sadness that I note the passing of John C. Kerns on 24 November 1995. I enjoyed working with him on our joint monograph *The Nostratic Macrofamily: A Study in Distant Linguistic Relationship*, and I will miss him.

Allan R. Bomhard  
Charleston, SC





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## Introduction, History of Research, and Methodology

### 1.1. Introduction

Distant (or long-range) linguistic comparison seeks to investigate the possibility that certain languages or language families, not previously thought to be genetically related, at least not “closely” related, might indeed be part of still larger groupings, which may be called “macrofamilies”.

This book will focus on Indo-European. The purpose is to show that Indo-European is not genetically isolated but, rather, that it is distantly related to certain other language families of northern and central Eurasia, the Indian subcontinent, and the ancient Near East. Where appropriate, issues concerning the other language families with which Indo-European is most likely related will also be discussed.

### 1.2. History of Research

From the very earliest days of Indo-European comparative linguistics, there have been speculations about the possible genetic relationship of Indo-European to other language families. Though, in the course of study, many striking similarities were noted between Indo-European and certain other language phyla, notably Uralic and Afroasiatic, truly convincing evidence of distant linguistic relationship was simply not brought forth. Indeed, much of the early work was not of high quality and did more to discredit the attempt to discover possible relatives of Indo-European than to help. Gradually, the intellectual climate, especially in the United States, became hostile to long-range comparison, and Indo-European remained an orphan with no known relatives.

In the first half of the last century, no less a figure than one of the founders of Indo-European comparative grammar, Franz Bopp, investigated possible relationship of Indo-European with Kartvelian (in 1846 and 1847) on the one hand and with Malayo-Polynesian (in 1840) on the other. In the mid-1860's, Rudolf von Raumer (in 1863) and Graziadio Ascoli (in 1864) claimed that Indo-European and Semitic were related. At about the same time (in 1869), Vilhelm Thomsen proposed relationship between Indo-European and Finno-Ugrian. This proposal was later (in 1879) explored in depth by the Estonian Nicolai Anderson and (in 1900) by the British phonetician Henry Sweet. Unfortunately, Anderson's work contained too many errors to be of lasting value. However, insightful and solid contributions were made concerning

the possible relationship of Indo-European and Uralic during the current century by the Swedish Uralicist Björn Collinder. Towards the end of the last century (1873), the Semiticist Friedrich Delitzsch investigated lexical parallels between Indo-European and Semitic. Then, at the beginning of this century, the Danish linguist Hermann Möller, in the course of several publications, attempted to show that Indo-European and Semitic might be related. Möller's work was later continued by the French linguist Albert Cuny, whose last publications date from the mid-1940's. Möller's and Cuny's efforts were generally not highly regarded by the scholarly community. One exception was Möller's student Holger Pedersen, who not only coined the term "Nostratic" but who also expanded the definition to include Indo-European, Semitic, Samoyed and Finno-Ugrian, Turkish, Mongolian, Manchu, Yukaghir, and Eskimo (cf. Pedersen 1931:337—338). In 1969, Linus Brunner published a detailed comparison of the Indo-European and Semitic vocabularies, and this was followed in 1980 by a wider comparison of languages undertaken by Kalevi E. Koskinen. We should note also that, though the investigation of problems relating to distant linguistic comparison was generally ignored by the vast majority of mainstream linguists, the field was never completely dormant — a small but persistent group of scholars (Pentti Aalto, Knut Bergsland, Václav Blažek, René Bonnerjea, Karl Bouda, Bojan Čop, Heinz Fähnrich, Carleton T. Hodge, G. A. Klimov, D. H. Koppelman, Saul Levin, Karl Menges, Roy Andrew Miller, Mikolas Palmaitis, Stephen A. Tyler, Ants-Michael Uesson, C. C. Uhlenbeck, to name but a few of the many scholars working on long-range comparison) has continued to work, throughout the better part of this century, on binary (or, in rare cases, wider) comparisons of various languages that are currently considered to belong to the Nostratic macrofamily. For comprehensive bibliographies listing publications dealing with distant linguistic comparison, cf. Hegedűs 1992, Landsberg 1986, and Bomhard—Kerns 1994:715—864.

Recently, beginning in the mid-1960's, the intellectual climate has slowly begun to turn around, and a growing number of linguists, especially in the former Soviet Union, have begun to turn attention toward investigating distant linguistic relationship. The revived interest was sparked by the work of Vladislav M. Illič-Svityč and Aaron B. Dolgopolsky, who first started working independently and, at a later date, through the efforts of their mutual friend Vladimir Dybo, cooperatively. Their work, though not without its own shortcomings, was the first successful demonstration that certain language phyla of northern and central Eurasia, the Indian subcontinent, and the ancient Near East might be genetically related. Following a proposal made in 1903 by Holger Pedersen, they employed the name "Nostratic" to designate this grouping of languages. In particular, Illič-Svityč, in the course of several publications, culminating in his posthumous comparative Nostratic dictionary, which is still in the process of publication, included Indo-European, Kartvelian, Afroasiatic, Uralic, Dravidian, and Altaic in his version of the Nostratic macrofamily. From his very earliest writings, Dolgopolsky also included Chukchi-Kamchatkan and Eskimo-Aleut.

Before his tragic death in an automobile accident on 21 August 1966, Illič-Svityč had planned to prepare a comparative Nostratic dictionary listing over 600 Nostratic roots and tracing their development in detail in each of the daughter languages in which they were attested. He had published a preliminary report on his work in 1965 entitled (in English translation)

“Materials for a Comparative Dictionary of the Nostratic Languages (Indo-European, Altaic, Uralic, Dravidian, Kartvelian, Hamito-Semitic)”. Working diligently, literally devoting all of his energy to the project, he had managed to prepare the entries for approximately 350 roots. After his death, Illič-Svityč’s work was prepared for publication by the dedicated efforts of Rimma Bulatova, Vladimir Dybo, and Aaron Dolgopolsky, with the result that the first volume of the dictionary appeared in 1971, containing 245 entries. A second, smaller volume appeared in 1976, listing entries 246 through 353 and ending with an index — this completed all of the material prepared by Illič-Svityč himself (by the time this volume appeared, Dolgopolsky was in the process of emigrating to Israel). Finally, the first fascicle of volume three appeared in 1984, containing entries 354 through 378, none of which were prepared by Illič-Svityč — it represents the collective efforts of a team of scholars.

In the meantime, Dolgopolsky has continued to make important contributions to Nostratic studies, especially in a 1984 paper on Nostratic pronouns, and currently has material to support the reconstruction of just over 2,000 Nostratic roots. Unfortunately, only a small amount of this material has been published to date. Other Russian scholars have also done important research into problems affecting Nostratic — mention should be made of the work of Alexandra Y. Aikhenvald, N. D. Andrejev, M. S. Andronov, Vladimir Dybo, Eugene Helimskij, Vjačeslav V. Ivanov, G. Kornilov, Oleg Mudrak, Vitaly V. Shevoroshkin, Sergej A. Starostin, V. A. Terent’jev, Vladimir N. Toporov, and V. L. Tsymburskij, among others. Though not Russian (but clearly someone who belongs to the “Moscow School”), special recognition must be given to the Czech scholar Václav Blažek, who has published many important papers, most of which deal with the common Nostratic lexicon. Another who should be noted is Alexis Manaster Ramer.

Beginning with an article that appeared in *Orbis* in 1975, Allan R. Bomhard published several studies, culminating in a 1984 book entitled *Toward Proto-Nostratic: A New Approach to the Comparison of Proto-Indo-European and Proto-Afroasiatic*, in which he tried to show that Indo-European and Semitic (later expanded to include all of Afroasiatic) might be distantly related. Reviews of this book as well as discussions with colleagues prompted Bomhard to expand the scope of his research to include other language families. This resulted in the publication in April 1994 by Bomhard of a joint monograph with John C. Kerns entitled *The Nostratic Macrofamily: A Study in Distant Linguistic Relationship*. It was Kerns who prepared the chapter dealing with Nostratic morphology. This book supplies a great deal of lexical evidence from the Nostratic daughter languages to support the reconstruction of 601 Proto-Nostratic roots. In a forthcoming article (to appear in 1995 in *Orbis*), Bomhard supplies material to support an additional 29 Proto-Nostratic roots. Bomhard continues to gather lexical data and plans future articles listing still more common Nostratic roots. It should be noted that Bomhard’s views on Nostratic differ somewhat from those of Illič-Svityč (and others who follow his system) — the differences are discussed in §5 below.

Joseph Greenberg is currently preparing a two-volume work to be entitled *Indo-European and its Closest Relatives: The Eurasiatic Language Family*. The first volume will deal with grammar, and the second will deal with lexicon. Greenberg includes Indo-European, Uralic-Yukaghir, Altaic (Mongolian, Chuvash-Turkic, and Manchu-Tungus), Japanese-Korean (Korean,

Ainu, and Japanese-Ryukyuan), Gilyak, Chukchi-Kamchatkan, and Eskimo-Aleut in his Eurasiatic language family. Unlike Illič-Svityč and Bomhard, he does not include Kartvelian, Afroasiatic, nor Elamo-Dravidian — not because he believes that they are unrelated, but because he believes that these three language phyla are more distantly related to Indo-European than are the others, which, along with Indo-European, form a natural taxonomic subgrouping. My own opinion is close to that of Greenberg. As I see the situation, Nostratic includes Afroasiatic, Kartvelian, and Elamo-Dravidian as well as Eurasiatic, in other words, I view Nostratic as a higher-level taxonomic entity. Afroasiatic stands apart as an extremely ancient, independent branch — it was the first branch of Nostratic to separate from the rest of the Nostratic speech community. Younger are Kartvelian and Elamo-Dravidian. It is clear from an analysis of their vocabulary, pronominal stems, and morphological systems that Indo-European, Uralic-Yukaghir, Altaic, Gilyak, Chukchi-Kamchatkan, and Eskimo-Aleut are more closely related as a group than any one of them is to Afroasiatic, Kartvelian, and Elamo-Dravidian, and this is the reason that I follow Greenberg in setting up a distinct Eurasiatic subgroup within Nostratic. Finally, Sumerian, if it really does belong here, is a separate branch, perhaps closest to Elamo-Dravidian. It must be noted here that I am still uncertain about the exact positioning of Kartvelian and Elamo-Dravidian. Clearly, the Kartvelian pronoun stems are more closely related to those found in Eurasiatic. On the other hand, it resembles Afroasiatic in its use of prefixes, for example. As for Elamo-Dravidian, its pronoun stems have about the same number of parallels with Afroasiatic as they do with Eurasiatic or Kartvelian. However, in both nominal declension and verbal conjugation, Elamo-Dravidian is closer to Eurasiatic than to Afroasiatic. My present thinking is that Kartvelian is probably closer to Eurasiatic than what I indicated in my book and that the differences are due to innovations within Kartvelian. An attempt at subgrouping is shown in Chart 1.

Interest in issues dealing with Nostratic has resulted in several recent conferences, the first of which was held in Moscow in 1972 to coincide with the publication of the first volume of Illič-Svityč's comparative Nostratic dictionary. This was followed by a series of gatherings in Russia. Another major conference was held in Ann Arbor, Michigan, at the end of 1988. Organized by Vitaly Shevoroshkin and Benjamin Stolz, this symposium brought together scholars from East and West. A series of volumes under the editorship of Shevoroshkin has been appearing as a result of this conference (published by Brockmeyer in Bochum, Germany). Shevoroshkin has also organized several smaller-scale, follow-up conferences. At the end of 1993, a workshop with the theme "The Second Workshop on Comparative Linguistics. The Status of Nostratic: Evidence and Evaluation" was organized at East Michigan University, Ypsilanti, Michigan. Papers from this workshop are now being prepared for publication (under the editorial auspices of Brian Joseph and Joe Salmons).

### **1.3. Methodology**

Even though I have repeated the following points verbatim many times in previous works, I still read irresponsible statements being made in the literature to the effect that

Nostraticists do not use “traditional methods” or that they use a “weakened form” of the Comparative Method. Nothing could be farther from the truth. Therefore, I will once again state the methodological principles used in distant linguistic comparison (this is a slightly revised and expanded version of the discussion of methodology found in my recent book [Bomhard—Kerns 1994:7—11]).

The founders of Indo-European comparative linguistics placed great importance on the comparison of grammatical forms, and this bias continues to the present day in Indo-European studies and has even been carried over into the study of other language families. However, this overemphasis on the comparison of grammatical forms is far too restrictive and was the reason that the Celtic languages, which have developed many unique features, were not immediately recognized as Indo-European. As noted over sixty years ago by Pedersen (1931:245):

That agreement in the inflectional system is an especially clear and striking proof of kinship, no one denies. But it is only an anachronism in theory, which has no significance in actual practice, when such an agreement is still designated as the only valid proof. No one doubted, after the first communication about Tocharian..., that the language was Indo-European, though at that time virtually no similarities in inflection had been pointed out. Such similarities have since been shown, but even where they are almost obliterated, proof of kinship could be adduced from the vocabulary and from sound-laws. Hardly any one will assert that it would be impossible to recognize the relationship between, say, English and Italian, even without the help of other related languages or older forms of these two languages themselves, although agreements between the inflectional systems are practically nonexistent.

From the modern point of view it must be said that proof of relationship between languages is adduced by a systematic comparison of languages in their entirety, vocabulary as well as grammar. The reason why earlier scholars felt they should disregard the vocabulary was that they knew of no method of systematic comparison in the field.

The approach to language comparison that I have followed in attempting to establish genetic relationship among the various Nostratic languages is derived, in part, from that advocated by Joseph H. Greenberg in the chapter entitled “Genetic Relationship among Languages” in his 1957 book *Essays in Linguistics* and, in part, from traditional methods of comparison and internal reconstruction. In my opinion, the combination of Greenberg’s methodology and more traditional methods of comparison can inform and further one another. The principles established by Greenberg are as follows:

Greenberg notes that the only way to establish hypotheses about genetic relationship is by comparing languages. However, the problem is in knowing which languages to compare and in knowing what to compare since not all aspects of language are equally relevant to comparison. To be meaningful, comparison must strive to eliminate chance resemblances and to separate borrowings from native elements. This is often easier said than done; however, Greenberg lays out two main techniques for detecting borrowed lexical items. First, he notes that borrowing is most commonly confined to certain semantic spheres (for example, cultural items) and certain grammatical categories (nouns far more often than verbs). Second, borrowed words can be distinguished from native vocabulary by expanding the range of comparison to include additional languages.

The simplest way to establish genetic relationship is by identifying a large number of similar morphs (or allomorphs) — especially irregularities — in similar environments in the languages being considered. Another significant indicator of probable genetic relationship is the presence of similar rules of combinability. Unfortunately, historical processes over the passage of time bring about the gradual transformation and eventual elimination of such similarities. The longer the period of separation, the lesser the chances will be that similarities of morphological forms and rules of combinability will be found.

Fortunately, there remain other factors that can be helpful in determining possible genetic relationship. One significant factor is the semantic resemblance of lexical forms. Here, it is important to be able to establish recurrent sound-meaning correspondences for a reasonably large sample of lexical material. Lexical forms with identical or similar meanings have the greatest value. Next in value come forms that, though divergent in meaning, can convincingly be derived, through widely-attested semantic shifts, from earlier forms of identical or similar meaning. The chances that lexical resemblances indicate genetic relationship increase dramatically when additional languages are brought into the comparison and when these new languages also exhibit a very large number of recurrent sound-meaning correspondences. Greenberg has termed this method “mass comparison” (more recently, he has used the term “multilateral comparison”). He considers the comparison of basic vocabulary from a large number of languages from a specific, wide geographic area to be the quickest and most certain method to determine possible genetic relationship. To Greenberg, lexical data are of paramount importance in attempting to establish genetic relationship among languages, especially in the initial stages of comparison.

The basic principles underlying the Comparative Method may be summarized as follows: The first step involves the arduous task of data gathering, placing special attention on gathering the oldest data available. Once a large amount of lexical material has been gathered, it must be carefully analyzed to try to separate what is ancient from what is an innovation and from what is a borrowing. After the native lexical elements have been reasonably identified in each phylum, the material can be compared across phyla to determine potential cognates. Once a sufficient body of potential cognates have been identified, one can begin to work out the sound correspondences. Not only must the regular sound correspondences (that is, those that occur consistently and systematically) be defined, exceptions must also be explained. Here, widely-attested sound changes (palatalization, metathesis, syncope, assimilation, dissimilation, etc.) provide the key to understanding the origin of most exceptions. In other cases, the analysis of the influence that morphology has exerted provides an understanding of how particular exceptions came into being. Some exceptions, though clearly related, simply defy explanation. All of these must be noted. The final step involves the reconstruction of ancestral forms and the formulation of the sound laws leading to the forms in the descendant languages, identifying the laws that have produced the regular sound correspondences as well as the exceptions. The same principles apply to the reconstruction of grammatical forms and rules of combinability and to the identification of the historical transformations leading to the systems found in the daughter languages. Invariably, it takes the dedicated efforts of several generations of scholars to work out all of the details. Here, we may cite the case of Indo-European — as even the most casual reading of Lehmann’s new book (1993) on the *Theoretical Bases of Indo-European Linguistics*

shows, after nearly two full centuries of investigation of what must surely be the most thoroughly-studied language family on the face of the earth, there still remain many uncertainties about the reconstruction of the Indo-European parent language. The following works are excellent introductions to Comparative-Historical Linguistics: Arlotto 1972; Bynon 1977; Lehmann 1992 — more advanced are: Anttila 1989 and Hock 1991.

At this point, we may note that the description of the Comparative Method and Internal Reconstruction given by Schwink (1994:9) is virtually identical to the procedure outlined in the preceding paragraph:

Let us now proceed to the nuts and bolts of reconstruction. Winter (1970:149) describes the comparative method in the following terms. First one carries out "inspection". This is looking at a number of languages for "a sufficient number of apparently recurrent correspondences". One should look at the oldest stages of languages, judge which languages have the most archaic features or residues (Lehmann 1990). Inspection is followed by "sorting" which involves a complete listing of the correspondences discovered although without interpretation (Winter 1970:149). Thereafter comes the reduction of the material to major correspondence classes. If there are irregularities in distribution, one looks for specific factors which may condition the difference. This is now an interpretive procedure. The label chosen for an entity of a major correspondence class should have "a maximum of similarity with the items labeled" (p. 152). In this selection, the question of archaicity of daughter languages will be taken into account. After assumption that the label represents some earlier stage of the languages being looked at, an attempt may be made to look at the labels of parts of systems.

The comparative method does not produce temporal distinctions... It produces a proto-language which is a potpourri of features. It will be the job of internal analysis to sort out this proto-language.

As noted in the first paragraph, it was necessary to discuss these issues in order to address concerns that have been raised about the applicability of traditional methods of comparison to long-range comparison. It must be made perfectly clear that the same principles are just as applicable to long-range comparison as they are to any other type of linguistic comparison. The fact is, these are the only tools we have. Moreover, they work — their efficacy has been proven over and over again.

Furthermore, claims that these methodologies break down when one tries to apply them beyond a certain time limit, say 5,000 to 10,000 years ago, can be shown, without a shadow of doubt, to be false. One can cite, for example, the case of the aboriginal languages of Australia. Archaeological evidence indicates that Australia has been inhabited by human beings for approximately 40,000 years. Though there remain many unsettled questions, such as exactly when Proto-Australian was spoken (probably at least 30,000 years ago), or about how the different languages should be subgrouped, and so on, there can be no question that all extant languages belong to the same family (cf. Ruhlen 1987:188), and comparative work on these languages is continuing apace (cf. Dixon 1980). Another example that can be cited is the case of the Afroasiatic language family. Due to the extremely deep divisions among the six branches of Afroasiatic (Semitic, Egyptian, Berber, Omotic, Cushitic, and Chadic), which are far greater than those found, by way of comparison, among the earliest attested branches of Indo-European, the Afroasiatic parent language must be placed as far back as 10,000 BCE (cf. Diakonoff 1988:33,

fn. 15), or perhaps even earlier, according to some scholars (Hodge [1993:99], for example, dates Proto-Afroasiatic [his Lisramic] at 13,000 BCE). This extremely ancient date notwithstanding, the major sound correspondences have been determined with great accuracy (see especially Diakonoff 1992), excellent progress is being made in reconstructing the common lexicon (a new Afroasiatic etymological dictionary has just been published by Vladimir E. Orël and Olga V. Stolbova [1995]), and scholars are beginning to piece together the original morphological patterning, though progress here lags behind other areas. A good survey of the Afroasiatic languages is (in English translation): *Languages in the Ancient and Modern World: Hamito-Semitic Languages*, edited by David Cohen (Paris: Centre National de la Recherche Scientifique, 1988).

One last point needs to be made: Reconstructed languages should be thought of as real languages in every sense of the term. Of course, our reconstructions are, in a sense, purely formulaic, and one can only hope to approximate, not fully recover, all of the features of the actual proto-language. Nevertheless, our reconstructions can be surprisingly accurate, as can be seen, for instance, when reconstructed Proto-Romance is contrasted with so-called “Vulgar Latin”. When we undertake the task of trying to recover the salient features of this or that proto-language, we must be very careful not to reconstruct anything that is not characteristic of language in general: our goal should be to strive for reality in our reconstructions (cf. Labov 1994:17). The prudent use of the insights gained from linguistic typology can be extremely valuable in helping to arrive at realistic reconstructions. Now, a few more conservative linguists have questioned the propriety of using typological data in Historical-Comparative Linguistics, their main argument running somewhat along the lines: “since we cannot possibly know all of the languages that currently exist or that have ever existed, we cannot say that such and such a type was impossible, unnatural, or has never existed” — that is to say, our “database” of linguistic systems will always be incomplete. Of course, there is no arguing with this line of reasoning. However, these linguists miss an important point: from all of the data that have been collected to date — from an extremely large sample of the world’s languages — there emerge consistent, regular patterns that are repeated over and over again. There are, to be sure, rare types — typological isolates, so to speak —, but these are less important (though no less interesting) from a statistical point of view. It is the regular patterning that has emerged from the analysis of the data from a great number of languages that is most important to Historical-Comparative Linguistics. These data are important in two respects: (A) they provide a control against which our reconstructions can be evaluated and (B), when part of a system has been reconstructed, they provide a means to deduce what the rest of the system might have been like, that is to say, they can be used as a discovery procedure by making use of “implicational universals”. Concerning the consistent, regular patterning that has been observed, it should be noted that the basis for some of this patterning is human physiology, and, in such cases, we can speak of true universals. Given this regular patterning, it is disturbing when our reconstructions contradict it, as in the case of one form of the traditional reconstruction of Proto-Indo-European, for instance. To say merely that “Indo-European was a unique type” or some such statement only means that the person making such a statement chooses not to confront the issues involved. We should not hesitate to use every means at our disposal to help us arrive at realistic reconstructions. To be sure, we should be fully cognizant of the work of our predecessors and



adhere closely to the time-honored methodologies — the Comparative Method and Internal Reconstruction — that have served Comparative-Historical Linguistics well since the days of Bopp, Rask, and Grimm. However, we must not stop here — we must also make full use of recent advances in phonological theory that have broadened our understanding of sound change, of new insights gained from typological studies, and our proposals must be consistent with the data. For an superb overview of the relevancy of typological studies to diachronic linguistics, cf. Schwink 1994.

In attempting to determine whether or not particular lexical items from the various language families might be related, I have made extensive use of Carl Darling Buck's *A Dictionary of Selected Synonyms in the Principal Indo-European Languages* as a control for the semantic development of the proposed lexical parallels. It may be noted that, in examining the lexicons of Kartvelian, Afroasiatic, Uralic-Yukaghir, Elamo-Dravidian, Altaic, and Sumerian, I have observed that semantic shifts similar to those described by Buck for the Indo-European languages are found over and over again in these other language families as well.

One final note is necessary. Recently, several scholars (most notably, Donald Ringe and Sheila Embleton) have proposed techniques based upon statistical modeling and probability analysis as a means to help us judge the validity of our proposals concerning possible genetic relationship. Properly used, these techniques can indeed provide another valuable tool, which may be used along with, but not as a replacement for, established methodologies. Moreover, these techniques have the important advantage of introducing an objective set of criteria against which our proposals can be evaluated.

#### 1.4. The Comparative Method

In the previous section, we discussed the methodologies used in long-range linguistic comparison and showed that these are the same methodologies used in any other type of linguistic comparison. In this section, we will explore the Comparative Method in greater detail, repeating and expanding upon what was said in the previous section and using data from the Nostratic daughter languages to illustrate the principles involved.

First, let us begin with a formal definition of the Comparative Method (cf. Kimball 1992:274):

**COMPARATIVE METHOD** examines items (e.g. phonemes, morphemes, or syntactic constructions) from two or more languages to establish genetic relationship and reconstruct ancestral forms. Unlike typological comparison, which ignores genetic affiliation, the comparative method assumes that the languages compared are (or may be) cognate languages: the descendants of a common ancestor.

Moreover, Hock (1991:567) further defines the purpose of reconstruction:

The ultimate proof of genetic relationship, and to many linguists' minds the only real proof, lies in the successful reconstruction of the ancestral forms from which the systematically corresponding cognates can be derived. (Note that just as in courts of law, the terms 'proof', 'prove' here are

used in the sense of 'establish beyond a reasonable doubt'. In fact, the general tenet of historical linguistics is that all hypotheses, whether they concern genetic relationship, 'language-internal' developments like sound change or analogy, or contact-induced changes, should be established beyond a reasonable doubt. It must be admitted, however, that this tenet is often ignored in practice.)

Hock's statement is extremely important and pinpoints the crux of the problem in attempts to establish genetic relationship, especially long-range genetic relationship — it seems that no one can agree on the threshold beyond which "reasonable doubt" has been dispelled. For some, the threshold is set so low that highly unlikely proposals can slip by, while, for others, the threshold is set so high that even well-established language families have difficulty passing.

Next, Kimball (1992:275) notes that "[t]he comparative method makes three assumptions":

- a) The relationship between sound and meaning is arbitrary; therefore, widespread similarity in form and meaning between two languages cannot be accidental.
- b) Corresponding features of cognate languages continue features inherited from an ancestral stage or proto-language.
- c) Completed sound changes are exceptionless.

As previously stated, the first step involves the arduous task of data gathering, placing special attention on gathering the oldest data available. Once a large amount of lexical material has been gathered, it must be carefully analyzed to try to separate what is ancient from what is an innovation and from what is a borrowing. This is not a simple task — the problem of borrowing is particularly acute within Altaic, for instance. Greenberg has addressed this problem by laying out two main techniques for detecting borrowed lexical items. First, he notes that borrowing is most commonly confined to certain semantic spheres (for example, cultural items) and certain grammatical categories (nouns far more often than verbs). Second, borrowed words can be distinguished from native vocabulary by expanding the range of comparison to include additional languages. Moreover, there are important clues that can assist us in identifying borrowings. First, a knowledge of the history or, in the case of reconstructed languages, the prehistory of a language can tell us which languages were in contact or might have been in contact with the language or languages under analysis at different stages in its history. Next, knowledge of the different levels of material culture achieved by population groups speaking these languages at particular times in their history will give us a clue about the probable direction of borrowings. Archeology can be of value here by providing us with a description of the artifacts of the material cultures in question, by giving us a glimpse of the salient characteristics of the societies using those artifacts, and by identifying probable trade routes and population movements.

Let us turn once again to Kimball (1992:275) to see what she has to say on this matter:

However, languages can resemble each other for other reasons. Onomatopoeic words, 'baby-talk', and words showing sound symbolism are excluded from consideration; in these, the relationship between sound and meaning is not entirely arbitrary. Similarity can result from borrowing and other effects of language contact, or even from sheer chance — factors which must be eliminated in a list of potential cognates.

Sometimes knowledge of the external history of a language allows us to exclude borrowing as a cause of similarity. For example, we know that many English words resemble French words because English has borrowed extensively from French since the 11th century. Where language contact is less well documented or prehistoric, similarity resulting from borrowing can be excluded with reasonable certainty by selecting items unlikely to have been borrowed. For instance, words referring to technology or material culture, which are often borrowed along with cultural or technological innovations, may make poor candidates for comparison. By contrast, basic vocabulary — kinship terms, numerals, pronouns, pre- and postpositions, and common verbs, adverbs, adjectives, and nouns — are less likely under most circumstances to be borrowed, and are usually more helpful to the comparativist.

After the native lexical elements have been reasonably identified in each phylum, the material can be compared across phyla to determine potential cognates. Once a sufficient body of potential cognates have been identified, one can begin to work out the sound correspondences. Let us illustrate this by looking at a few cognates from the Nostratic languages (only the reconstructed forms will be given for each language group, except Sumerian — for full supporting data, cf. Bomhard—Kerns 1994):

1. Proto-Indo-European *\*b<sup>h</sup>or-*/*\*b<sup>h</sup>ǵ-* “to bore, to pierce”; Proto-Afroasiatic *\*bar-*/*\*bār-* “to bore, to pierce”; Proto-Uralic *\*pura* “borer, auger”; Proto-Dravidian *\*pur-* “to bore, to perforate; borer, gimlet”; Proto-Altaic *\*bur-* “to bore through, to pierce”; Sumerian *bùr* “to bore through, to pierce”.
2. Proto-Indo-European *\*b<sup>h</sup>ǵer-*, *\*b<sup>h</sup>ǵru-* “brown”; Afroasiatic: Proto-East-Cuchitic *\*boʔr-* (< *\*borʔ-*) “yellow, brown, red, dark-colored”; Proto-Altaic *\*borɣ-* “gray, brown” (< “dark-colored”).
3. Proto-Kartvelian *\*bur-* “to cover, to enclose”; Proto-Dravidian *\*pōr-* “to wrap around (the body), to cover, to enclose; a cover, covering, wrapping”; Proto-Altaic *\*büri-* “to cover, to enclose”.
4. Proto-Indo-European *\*b<sup>h</sup>ǵars-* “grain”; Proto-Afroasiatic *\*bar-*/*\*bār-* “grain, cereal”; Proto-Dravidian *\*par-* “grain, seed, pebble”; Sumerian *bar* “seed”.

The correspondence, in initial position, of Proto-Indo-European *\*b<sup>h</sup>ǵ-*, Proto-Kartvelian *\*b-*, Proto-Afroasiatic *\*b-*, Proto-Uralic *\*p-*, Proto-Dravidian *\*p-*, Proto-Altaic *\*b-*, and Sumerian *b-* allows us to reconstruct Proto-Nostratic *\*b-*.

1. Proto-Indo-European *\*p<sup>h</sup>ǵer-*/*\*p<sup>h</sup>ǵor-*/*\*p<sup>h</sup>ǵǵ-* “to fly, to flee”; Proto-Kartvelian *\*p<sup>h</sup>ǵr-in-* “to fly”; Proto-Afroasiatic *\*p<sup>h</sup>ǵar-*/*\*p<sup>h</sup>ǵār-* “to fly, to flee”; Proto-Dravidian *\*paɾ-* “to fly, to flee; to hasten, to hurry”.

2. Proto-Indo-European *\*p<sup>h</sup>]er-/p<sup>h</sup>]r-* “to bear, to bring forth”; Proto-Afroasiatic *\*p<sup>h</sup>]ar-/p<sup>h</sup>]ər-* “to bring forth, to bear fruit”; Proto-Dravidian *\*peṛ-* “to get, to beget, to bear”; Proto-Altaic *\*püre* “seed, fruit; result, offspring”.
3. Proto-Indo-European *\*p<sup>h</sup>]et<sup>h</sup>]/p<sup>h</sup>]ot<sup>h</sup>]-* “to fly, to rush, to pursue; to fall, to fall down”; Proto-Kartvelian *\*p<sup>h</sup>]et<sup>h</sup>]k<sup>h</sup>]-* “to quiver, to tremble, to vibrate, to explode”; Proto-Afroasiatic *\*p<sup>h</sup>]at<sup>h</sup>]/p<sup>h</sup>]ət<sup>h</sup>]-* “to rush, to hurry, to go rapidly; to fall down”; Proto-Dravidian *\*pat-* “to hurry; to flutter, to quiver, to shake; to be flurried, impatient, overhasty”.
4. Proto-Indo-European *\*p<sup>h</sup>]es-/p<sup>h</sup>]os-* “penis”; Proto-Finno-Ugrian *\*pasʷ3* “penis”; Proto-Altaic *\*püsü* “to squirt out, to pour”; Sumerian *peš* “sperm, semen”, *peš* “descendant, offspring, son”.

In these examples, the correspondence, in initial position, of Proto-Indo-European *\*p<sup>h</sup>]-*, Proto-Kartvelian *\*p<sup>h</sup>]-*, Proto-Afroasiatic *\*p<sup>h</sup>]-*, Proto-Uralic *\*p-*, Proto-Dravidian *\*p-*, Proto-Altaic *\*p-*, and Sumerian *p-* allows us to reconstruct Proto-Nostratic *\*p<sup>h</sup>]-*.

1. Proto-Indo-European *\*me-/mo-* 1st person personal pronoun stem (oblique cases); Proto-Kartvelian *\*me-*, *\*men-* 1st person personal pronoun stem; Proto-Afroasiatic *\*ma-/mā-* 1st person personal pronoun stem (only in Chadic, with relics in Cushitic); Proto-Uralic *\*me* 1st person singular personal pronoun stem: “I, me”, *\*me* 1st plural personal pronoun stem; Proto-Altaic (nom. sg.) (*\*mi* >) *\*bi* “I”, (oblique stem) *\*min-*; Sumerian (Emesal) *ma(-e)*, *me-a*, *me-e* “I”, (1st pl. possessive suffix) *-me* “our”; Chukchi-Kamchatkan *\*(gə-)m* “I” ([gə-] is a marker of independent pronouns). Note here also Etruscan *mi* “I”, *mini* “me”.
2. Proto-Indo-European *\*mo-* demonstrative stem (preserved vestigially in Celtic); Proto-Kartvelian *\*ma-* demonstrative stem: “this, he”; Proto-Finno-Ugrian *\*mu* “other, another”; Altaic: Common-Turkic (nom. sg.) (*\*mū/\*mō* >) *\*bū/\*bō* “this”, (oblique stem) *\*mu-n-*; Mongolian *mōn* deictic word serving as a demonstrative pronoun, adjective, adverb, and copula.
3. Proto-Indo-European *\*me-/mo-* interrogative and relative pronoun stem (preserved in Hittite and Tocharian, with vestiges in Celtic); Proto-Kartvelian *\*mi-n-* interrogative pronoun, *\*ma-* “what”; Proto-Afroasiatic *\*ma-/mā-* relative and interrogative pronoun stem; Proto-Uralic *\*mi* interrogative and relative pronoun stem; Altaic: Turkish *mī*, *mī*, *mū*, *mū* interrogative particle; Sumerian *me-na-àm* “when?”, *me-a* “where?”, *me-še* “where to?”.
4. Proto-Indo-European *\*mer-/mor-* “to twist, to turn”; Proto-Afroasiatic *\*mar-/mār-* “to twist, to turn”; Proto-Dravidian *\*mur-* “to bend, to be bent, to turn round, to twist; (n.) rope, cord; bend, curve”, *\*mur-* “to twist, to twine, to tighten”; Proto-Altaic *\*muru-* “to turn, to twist, to bend”.

Here, the correspondence, in initial position, of Proto-Indo-European *\*m-*, Proto-Kartvelian *\*m-*, Proto-Afroasiatic *\*m-*, Proto-Uralic *\*m-*, Proto-Dravidian *\*m-*, Proto-Altaic *\*m-*, and Sumerian *m-* allows us to reconstruct Proto-Nostratic *\*m-*.

These correspondences can be summarized in a table:

PN	PIE	PK	PAA	PU	PD	PA	S
b-	b[h]-	b-	b-	p-	p-	b-	b-
p[h]-	p[h]-	p[h]-	p[h]-	p-	p-	p-	p-
m-	m-	m-	m-	m-	m-	m-	m-

Abbreviations: PN = Proto-Nostratic; PIE = Proto-Indo-European; PK = Proto-Kartvelian; PAA = Proto-Afroasiatic; PU = Proto-Uralic; PD = Proto-Dravidian; PA = Proto-Altaic; S = Sumerian

Not only must the regular sound correspondences (that is, those that occur consistently and systematically) be defined (a full set of phonological correspondences can be found at the end of Chapter 4), exceptions must also be explained. Here, widely-attested sound changes (palatalization, metathesis, syncope, assimilation, dissimilation, etc.) provide the key to understanding the origin of most exceptions. In other cases, the analysis of the influence that morphology has exerted provides an understanding of how particular exceptions came into being. Some exceptions, though clearly related, simply defy explanation. All of these must be noted. The final step involves the reconstruction of ancestral forms and the formulation of the sound laws leading to the forms in the descendant languages, identifying the laws that have produced the regular sound correspondences as well as the exceptions. The same principles apply to the reconstruction of grammatical forms and rules of combinability and to the identification of the historical transformations leading to the systems found in the daughter languages.

Let us now look at some exceptions to the regular sound correspondences that have been established and provide explanations for these exceptions:

1. Proto-Indo-European *\*k[h]ap[h]-ro-* “he-goat, buck”, *\*k[h]ab-* > (with progressive voicing assimilation) *\*k[h]āp[h]-* “hoof” ~ Proto-Afroasiatic *\*k[h]ab-/k[h]əb-* “hoof, hoofed animal”.

In this example, the correspondence of Proto-Indo-European *\*-p[h]-* ~ Proto-Afroasiatic *\*-b-* is irregular — instead, we would expect Proto-Indo-European *\*-b[h]-* as the regular correspondence of Proto-Afroasiatic *\*-b-*. Now, it is well-known that Indo-European had a root-structure constraint against the appearance of both a voiced (aspirated) stop and a voiceless (aspirated)

stop in a root, that is to say, that they had to agree in voicing (cf. Benveniste 1935:170; Lehmann 1952:17) — thus, *\*t<sup>h</sup>heb<sup>h</sup>-* and *\*b<sup>h</sup>et<sup>h</sup>-* were not allowed. However, comparison with the other Nostratic languages indicates that the forbidden root types must have once existed. Therefore, a rule of progressive voicing assimilation may be set up to account for the elimination of the forbidden root types. This means that *\*t<sup>h</sup>heb<sup>h</sup>-* would have become *\*t<sup>h</sup>ep<sup>h</sup>-*, and *\*b<sup>h</sup>et<sup>h</sup>-* would have become *\*b<sup>h</sup>ed<sup>h</sup>-*. This is confirmed by other examples, such as:

2. Proto-Indo-European *\*dʷəkʷ<sup>h</sup>-*/*\*dʷakʷ<sup>h</sup>-* > (with progressive voicing assimilation and depalatalization of initial *\*dʷ*) *\*d<sup>h</sup>egʷ<sup>h</sup>-*/*\*d<sup>h</sup>ogʷ<sup>h</sup>-* “to blaze, to burn” ~ Proto-Afroasiatic *\*dʷakʷ<sup>h</sup>-*/*\*dʷəkʷ<sup>h</sup>-* “to blaze, to be bright”.

Another exception is found in the following examples:

1. Proto-Indo-European *\*(s)t<sup>h</sup>jek'-*/*\*(s)t<sup>h</sup>ok'-* “to cover” ~ Proto-Kartvelian *\*t'q'aw-* “skin, hide”; Proto-Afroasiatic *\*t'ak'-*/*\*t'ək'-* “to cover, to obscure”.
2. Proto-Indo-European *\*t<sup>h</sup>jek'-*/*\*t<sup>h</sup>ok'-* “to knock, to beat, to strike” ~ Proto-Kartvelian *\*t'k'ac<sup>h</sup>-* “to hit, to strike”; Proto-Afroasiatic *\*t'ak'-*/*\*t'ək'-* “to knock, to beat, to strike, to pound”; Proto-Finno-Ugrian *\*tuk3-* (*\*tuγ3-*) “to break, to crush”; Proto-Dravidian *\*tuk-* “to tread down, to trample on, to step on; to beat, to strike, to pound, to mash”; Proto-Altaic *\*tugi-la-* “to strike with the feet, to rear, to buck (of a horse)”; Sumerian *dug<sub>4</sub>-ga* “to strike, to beat, to hit, to smite, to kill”.

In these examples, the correspondence of Proto-Indo-European *\*t<sup>h</sup>-* ~ Proto-Kartvelian *\*t'-* and Afroasiatic *\*t'-* is irregular — instead, we would expect Proto-Indo-European *\*t'-* as the regular correspondence of Proto-Kartvelian *\*t'-* and Proto-Afroasiatic *\*t'-*. In traditional terms, Proto-Indo-European had a constraint against the appearance of two plain voiced stops within a root (cf. Benveniste 1935:170; Lehmann 1952:17), that is to say that a root could not both begin and end with a plain voiced stop. In terms of the Glottalic Theory (see Chapter 3, §4, for a discussion of the Glottalic Theory), this constraint is reinterpreted as a restriction against the co-occurrence of two glottalics in a root. This means that roots of the type *\*t'ek'-* (*\*deg-* in traditional terms) are not allowed. It may be noted that a similar constraint is found in a number of other languages having glottalics. However, comparison with the other Nostratic languages indicates that the forbidden root types must have once existed. Therefore, a rule of regressive deglottalization may be set up to account for the elimination of the forbidden root types. This means, for example, that *\*t'ek'-* would have become *\*t<sup>h</sup>jek'-*. This rule of regressive deglottalization finds a close parallel in Geers' Law in Akkadian (for details on Geers' Law, cf. Ungnad—Matouš 1969:27).

Now, up until this point, we have been using mostly reconstructed forms to illustrate the principles involved in the Comparative Method. However, reconstructed forms contain a sufficiently high enough margin of error by their very nature to render such comparisons suspect. This means that, ultimately, we must base our conclusions about possible genetic relationship on

an examination and analysis of the actual attested forms found in each daughter language. It is my contention that a comparison based on the actual attested forms alone, without recourse to the reconstructed forms, is sufficient to demonstrate the genetic relationship of the various Nostratic daughter languages. Let us illustrate this by looking at the data which support the reconstructions given in several of the examples above — we will look at one from each set.

First, let us look again at the words for “to bore, to pierce”:

1. (a) Proto-Indo-European *\*b<sup>[h]</sup>or-/ \*b<sup>[h]</sup>ǵ-* “to bore, to pierce”; (b) Proto-Afroasiatic *\*bar-/ \*bər-* “to bore, to pierce”; (c) Proto-Uralic *\*pura* “borer, auger”; (d) Proto-Dravidian *\*pur-* “to bore, to perforate; borer, gimlet”; (e) Proto-Altaic *\*bur-* “to bore through, to pierce”; (f) Sumerian *būr* “to bore through, to pierce”.

Here are some of the attested data from within each language family to support this example:

- a) Indo-European: Old English *borian* “to bore, to pierce”; Old High German *boro* “auger”; Latin *forō* “to bore, to pierce” (Latin *f-* < *\*b<sup>[h]</sup>-*); Greek *φάροω, φαρᾶω* “to plow”.
- b) Afroasiatic: Aramaic *bəraz* “to bore, to pierce”; Tigre (reduplicated) *bārabāra* “to pierce”; Geez / Ethiopic *barra, barara* “to pierce, to penetrate, to go through”.
- c) Uralic: Finnish *pura* “borer, auger, (big) awl”; Vogul / Mansi *pore, porä* “awl”; Ostyak / Xanty *pōr* “borer, auger”; Hungarian *fúr-* “to bore, to drill”; Yurak Samoyed / Nenets *parō* “borer, auger”; Selkup Samoyed *pur* “borer, auger”.
- d) Dravidian: Tamil *purai* “tubular hollow, tube, pipe, windpipe”; Tulu *perevuni* “to be bored, to be perforated”, *perepini* “to bore to perforate”, *burma, burmu* “a gimlet”, *berpuri* “borer, auger”.
- e) Mongolian *burγui-* “a piece of wire used to clean a smoking pipe”; Turkish *burmak* “to bore a hole”; Tatar *borau* “borer, auger”.
- f) Sumerian *būr* “to bore through, to pierce”.

The second example which we will explore in depth is the words for “to flee, to fly”:

2. (a) Proto-Indo-European *\*p<sup>[h]</sup>er-/ \*p<sup>[h]</sup>or-/ \*p<sup>[h]</sup>ǵ-* “to fly, to flee”; (b) Proto-Kartvelian *\*p<sup>[h]</sup>er-in-* “to fly”; (c) Proto-Afroasiatic *\*p<sup>[h]</sup>ar-/ \*p<sup>[h]</sup>ǵər-* “to fly, to flee”; (d) Proto-Dravidian *\*paṛ-* “to fly, to flee; to hasten, to hurry”.

Here are some of the attested data from within each language family to support this example:

- a) Indo-European: Sanskrit *parṇā-h* “wing, feather”; Hittite *pār-aš-zi* “to flee”; Russian Church Slavic *perǫ, pǫrati* “to fly”, *pero* “feather”; Czech *perchnouti* “to flee”; Polish *pierzchnąć* “to flee”; Serbo-Croatian *prhati* “to fly up”; Russian *pōrxát* “to flutter, to fly about”.
- b) Kartvelian: Georgian *pr-ena* “to fly”, (*m*)*prinveli* “bird”; Mingrelian *purin-* “to fly”; Zan *putin-* “to fly”.
- c) Afroasiatic: Akkadian *naprušu* “to fly, to take flight, to flee”; Arabic *farra* “to flee, to run away, to desert”, *nafara* “to flee, to run away”; Hebrew *pārah* “to fly”; Aramaic *pərah* “to fly”; Jibbali *ferr* “to fly, to flee, to jump up quickly”; Tigrinya *fārārā* “to fly, to fly away”; Tamazight *afṛaw* “to fly”, *afṛ* “wing”; Ma’a *pūru* “to fly”.
- d) Dravidian: Tamil *para* “to fly, to hover, to flutter, to move swiftly, to hasten, to be in a hurry; to be greatly agitated; to be scattered, dispersed; to disappear”, (reduplicated) *parapara* “to hasten, to hurry”, *paravai* “bird, wing, feather, bee”; Malayalam *parakka* “to fly, to flee”; Kannada *pari, paru* “flying, running swiftly”; Tulu *pārūni* “to run, to fly, to escape”; Telugu *paracu* “to run away, to flee, to flow; to cause to escape”, *pāru* “to run, to flow”.

The final example is the words for “I, me”:

- 3. (a) Proto-Indo-European *\*me-/mo-* 1st person personal pronoun stem (oblique cases); (b) Proto-Kartvelian *\*me-*, *\*men-* 1st person personal pronoun stem; (c) Proto-Afroasiatic *\*ma-/mə-* 1st person personal pronoun stem (only in Chadic, with relics in Cushitic); (d) Proto-Uralic *\*me* 1st person singular personal pronoun stem: “I, me”, *\*me* 1st plural personal pronoun stem; (e) Proto-Altaic (nom. sg.) (*\*mi >*) *\*bi* “I”, (oblique stem) *\*min-*; (f) Sumerian (Emesal) *ma(-e)*, *me-a*, *me-e* “I”, (1st pl. possessive suffix) *-me* “our”; (g) Chukchi-Kamchatkan *\*(gə-)m* “I” ([*gə-*] is a marker of independent pronouns). Note here also Etruscan *mi* “I”, *mini* “me”.

Here are some of the attested data from within each language family to support this example:

- a) Indo-European: Sanskrit (acc. sg.) *mā, mām* “me”; Greek (acc. sg.) *με, ἐμέ* “me”; Latin (acc.-abl. sg.) *mē* “me”; Gothic (acc. sg.) *mik* “me”; Lithuanian (acc. sg.) *manę* “me”; Old Church Slavic (acc. sg.) *mę, mene* “me”.
- b) Kartvelian: Old Georgian *me* “I”; Mingrelian *ma-* “I”; Zan *ma, man* “I”; Svan *mi* “I”.
- c) Afroasiatic: Chadic: Hausa (pl.) *maa* “we”, (indirect object pl.) *manà* “us, to us, for us”, (pl.) *muu* “we, us, our”, (past tense subj. pl.) *mun* “we”, (continuous tense subj. pl.) *munà* “we”; (indirect object sg.) *mini* “me, to me, for me”; Kotoko *mi* “we, us”; Mandara *ma* “we, us”; Musgu *mi* “we, us”, *mu* “I, me”; Bole *mu* “we, us”.



- d) Uralic: Finnish *minä* / *minu*- “I, me”; Lapp *mon* / *mú*- “I, me”; Mordvin *mon* “I, me”; Zyrian / Komi *me* “I”, (acc.) *menō* “me”; Selkup Samoyed *man*, *mat* “I, me”; Kamassian *man* “I, me”; Yukaghir *met* “I, me”.
- e) Altaic: Mongolian (nom. sg.) *bi* “I”, (gen. sg.) *minu* “my, of me”, (gen. pl. exclusive) *manu* “our, of us”; Manchu *bi* “I, me”, (gen. sg.) *mini* “my”; Old Turkish (nom. sg.) *mān* (rarely *bān*) “I”, (acc. sg.) *māni* “me”.
- f) Sumerian (Emesal) *ma(-e)*, *me-a*, *me-e* “I”, (1st pl. possessive suffix) *-me* “our”;
- g) Chukchi *γə-m* “I”.
- h) Etruscan *mi* “I”, *mini* “me”.

It is thus perfectly obvious that we are able to establish phonological correspondences on the basis of an analysis of the actual attested data from the individual Nostratic daughter languages alone, without recourse to reconstructions. Moreover, not only are we able to establish the regular sound correspondences by such an analysis, we are also able to identify and explain exceptions. And, it is on this basis as well that we are able to reconstruct the Proto-Nostratic forms. This is identical to what was done in Indo-European and which continues to be done in Comparative-Historical Linguistics — the Indo-European parent language was reconstructed on the basis of a direct comparison of the actual attested data from the individual Indo-European daughter languages without recourse to reconstructed Proto-Indo-Iranian, Proto-Italic, Proto-Greek, Proto-Germanic, etc. That is to say that it was not necessary to reconstruct every intermediary level before one could tackle the problems of reconstructing the Indo-European parent language. Of course, reconstruction is still both important and necessary. Reconstruction, including the reconstruction of intermediary levels, allows us to make powerful statements about the (pre)historical development of each daughter language, especially about how and why particular features came into being or became extinct. Finally, the understanding of what has taken place historically in one daughter language often provides an explanation of what has taken place in another daughter language.

In any attempt to establish genetic relationship, one is going to come across chance resemblances. By “chance resemblances”, one means unexpected, and sometimes rather striking, instances of identical or nearly identical vocabulary items or, in rare cases, even grammatical forms in two or more totally unrelated languages or in languages that, if they are related, are distant enough apart to make it otherwise unlikely that they would share such items. The example that Kimball (1992:275) gives is the word for “man”, *wiro*, in the extinct Timucua language, formerly spoken in northern Florida and southeastern Georgia, which resembles Latin *vir* “man”. Chance resemblances of this type do occur and, it goes without saying, do not indicate genetic relationship. Moreover, they seldom add up to more than a handful of examples. As noted above, one of the main assumptions of the Comparative Method is that “the relationship between sound and meaning is arbitrary; therefore, widespread similarity in form and meaning between two languages cannot be accidental”. Thus, when the languages under

analysis exhibit a large number of recurrent sound-meaning correspondences, we are not dealing with chance resemblances.

### **1.5. Critique of Moscovite Views on Nostratic**

Let me begin by stating unequivocally that I have the highest admiration for what Moscovite scholarship (especially the work of V. M. Illič-Svityč and A. B. Dolgopolsky — some of the work done by other Russian scholars is not on the same level) on Nostratic has achieved. Their research has opened up new and exciting possibilities and given Nostratic studies new respectability. However, this does not mean that I agree with everything they say. I regard their work as a pioneering effort and, as such, subject to modification in light of advances in linguistic theory, in light of new data from the Nostratic daughter languages, and in light of findings from typological studies that give us a better understanding of the kind of patterning that is found in natural languages as well as a better understanding of what is characteristic of language in general, including language change.

Let us begin by looking at phonology: In 1972 and 1973, the Georgian scholar Thomas V. Gamkrelidze and the Russian scholar Vjačeslav V. Ivanov jointly proposed a radical reinterpretation of the Proto-Indo-European stop system. According to their reinterpretation, the Proto-Indo-European stop system was characterized by the three-way contrast glottalized ~ voiceless (aspirated) ~ voiced (aspirated). In this revised interpretation, aspiration is viewed as a redundant feature, and the phonemes in question could also be realized as allophonic variants without aspiration. A similar proposal was made by Paul J. Hopper at the same time (Hopper [1973] and in a number of subsequent publications — these are listed in the references).

This new interpretation opens new possibilities for comparing Proto-Indo-European with the other Nostratic daughter languages, especially Proto-Kartvelian and Proto-Afroasiatic, each of which had a similar three-way contrast. The most natural assumption would be that the glottalized stops posited by Gamkrelidze and Ivanov for Proto-Indo-European would correspond to glottalized stops in Proto-Kartvelian and Proto-Afroasiatic, while the voiceless stops would correspond to voiceless stops and voiced stops to voiced stops. This, however, is quite different from the correspondences proposed by Illič-Svityč. He sees the glottalized stops of Proto-Kartvelian and Proto-Afroasiatic as corresponding to the traditional plain voiceless stops of Proto-Indo-European, while the voiceless stops in the former two branches are seen as corresponding to the traditional plain voiced stops of Proto-Indo-European, and, finally, the voiced stops to the traditional voiced aspirates of Proto-Indo-European. Illič-Svityč then reconstructs the Proto-Nostratic phonological system on the model of Kartvelian and Afroasiatic, with the three-way contrast glottalized ~ voiceless ~ voiced in the series of stops and affricates.

The mistake that Illič-Svityč made was in trying to equate the glottalized stops of Proto-Kartvelian and Proto-Afroasiatic with the traditional plain voiceless stops of Proto-Indo-European. His reconstruction would make the glottalized stops the least marked members of the Proto-Nostratic stop system. Illič-Svityč's reconstruction is thus in contradiction to typological evidence, according to which glottalized stops are uniformly the most highly marked members of

a hierarchy. The reason that Illič-Svityč's reconstruction would make the glottalized stops the least marked members is as follows: Illič-Svityč posits glottalics for Proto-Nostratic on the basis of one or two seemingly solid examples in which glottalics in Proto-Afroasiatic and/or Proto-Kartvelian appear to correspond to traditional plain voiceless stops in Proto-Indo-European. On the basis of these examples, he assumes that, whenever there is a voiceless stop in the Proto-Indo-European examples he cites, a glottalic is to be reconstructed for Proto-Nostratic, even when there are no glottalics in the corresponding Kartvelian and Afroasiatic forms! This means that the Proto-Nostratic glottalics have the same frequency distribution as the Proto-Indo-European plain voiceless stops. Clearly, this cannot be correct. The main consequence of Illič-Svityč's mistaken equation of the glottalized stops of Proto-Kartvelian and Proto-Afroasiatic with the traditional plain voiceless stops of Proto-Indo-European is that he is led to posit forms for Proto-Nostratic on the basis of theoretical considerations but for which there is absolutely no evidence in any of the Nostratic daughter languages. (For a discussion of markedness theory and its implications for historical-comparative linguistics, cf. Gamkrelidze 1978 and 1981.)

What about those examples adduced by Illič-Svityč which appear to support his proposed correspondences? Some of these examples admit alternative explanations, while others are questionable from a semantic point of view and should be abandoned. Once these examples are removed, there is an extremely small number (no more than a handful) left over that appear to support his position. However, compared to the massive counter-evidence in which glottalized stops in Kartvelian and Afroasiatic correspond to similar sounds (the traditional plain voiced stops) in Proto-Indo-European, even these residual examples become suspect (they may be borrowings or simply false cognates).

Another major shortcoming is in Illič-Svityč's reconstruction of the Proto-Nostratic vowel system, which, according to him, is essentially that of modern Finnish. It simply stretches credibility beyond reasonable bounds to assume that the Proto-Nostratic vowel system could have been preserved unchanged in Finnish, especially considering the many millennia that must have passed between the dissolution of the Nostratic parent language and the emergence of Finnish. No doubt, this erroneous reconstruction came about as a result of Illič-Svityč's failure to deal with the question of subgrouping. The Uralic-Yukaghir phylum, of which Finnish is a member, belongs to the Eurasiatic branch of Nostratic. Now, Eurasiatic is several millennia younger than Afroasiatic, which appears to be the oldest branch of the Nostratic macrofamily. Therefore, Afroasiatic must play a key role in the reconstruction of the Proto-Nostratic vowel system, and the Uralic-Yukaghir vowel system must be considered a later development that cannot possibly represent the original state of affairs.

### 1.6. Evidence for Nostratic

The following evidence provides the basis for setting up a Nostratic macrofamily:

1. First and foremost, the descendant languages can be shown to share a large common vocabulary. In an article published in 1965, Illič-Svityč listed 607 possible common

Nostratic roots, but only 378 have been published to date in his posthumous comparative Nostratic dictionary. It should be noted that there are differences between the etymologies proposed in 1965 and the items included in the later dictionary: first, some of the items listed in 1965 do not appear in the dictionary; next, minor changes have been made to several of the earlier etymologies. Dolgopolsky currently claims to have just over 2,000 common Nostratic roots, but only a small sampling of this material has been published to date. In the joint monograph by myself and John C. Kerns, entitled *The Nostratic Macrofamily: A Study in Distant Linguistic Relationship*, I supply a great deal of lexical material (approximately 25,000 cited forms) from the Nostratic daughter languages to support 601 common Nostratic roots. It should be mentioned here as well that Greenberg is currently preparing a book entitled *Indo-European and Its Closest Relatives: The Eurasiatic Language Family*, in which a large amount of lexical material will be discussed, though Greenberg's Eurasiatic is not the same as Nostratic.

2. As is to be expected, the various branches of Nostratic investigated to date exhibit regular sound correspondences (see Table 2 at the end of Chapter 4 for details), though, it should be mentioned, there are differences in interpretation between Illič-Svityč and Dolgopolsky on the one hand and myself on the other.
3. Finally, a substantial number of common grammatical formants have now been recovered — many of these are listed in Illič-Svityč's comparative Nostratic dictionary; see also the chapter on Nostratic morphology by John C. Kerns in Bomhard—Kerns (1994:141—190) and, especially, volume 1 of Greenberg's *Indo-European and Its Closest Relatives: The Eurasiatic Language Family*.

Notable among the lexical items uncovered by Illič-Svityč, Dolgopolsky, Greenberg, and myself is a solid core of common pronominal stems (these are listed below in Table 1, though only the stems represented in Indo-European are given — the Proto-Nostratic reconstructions are given according to my system; for information on other pronoun stems, cf. Dolgopolsky 1984). These pronominal stems have particular importance, since, as forcefully demonstrated by John C. Kerns (1985:9—50), pronouns, being among the most stable elements of a language, are a particularly strong indicator of genetic relationship (Ruhlen 1994:92—93 makes the same point). Kerns (1985:48) concludes (the emphasis is his):

The results are overwhelming. We are forced to conclude that the pronominal agreements between Indo-European and Uralic, between Uralic and Altaic, and between Indo-European and Altaic, did not develop independently, but instead were CAUSED by some UNIQUE historical circumstance. In short, it is extremely unlikely that the three pronominal systems could have evolved independently.

The conclusion seems inescapable that the consistent, regular phonological correspondences that can be shown to exist among the Nostratic daughter languages as well as the agreements in vocabulary and grammatical formants that have been uncovered to date cannot be explained as due to linguistic borrowing or mere chance but can only be accounted for in

terms of common origin, that is, genetic relationship. To assume any other possibility would be tantamount to denying the efficacy of the Comparative Method. This does not mean that all problems have been solved. On the contrary, there remain many issues to be investigated and many details to be worked out, but the future looks extremely exciting and extremely promising.

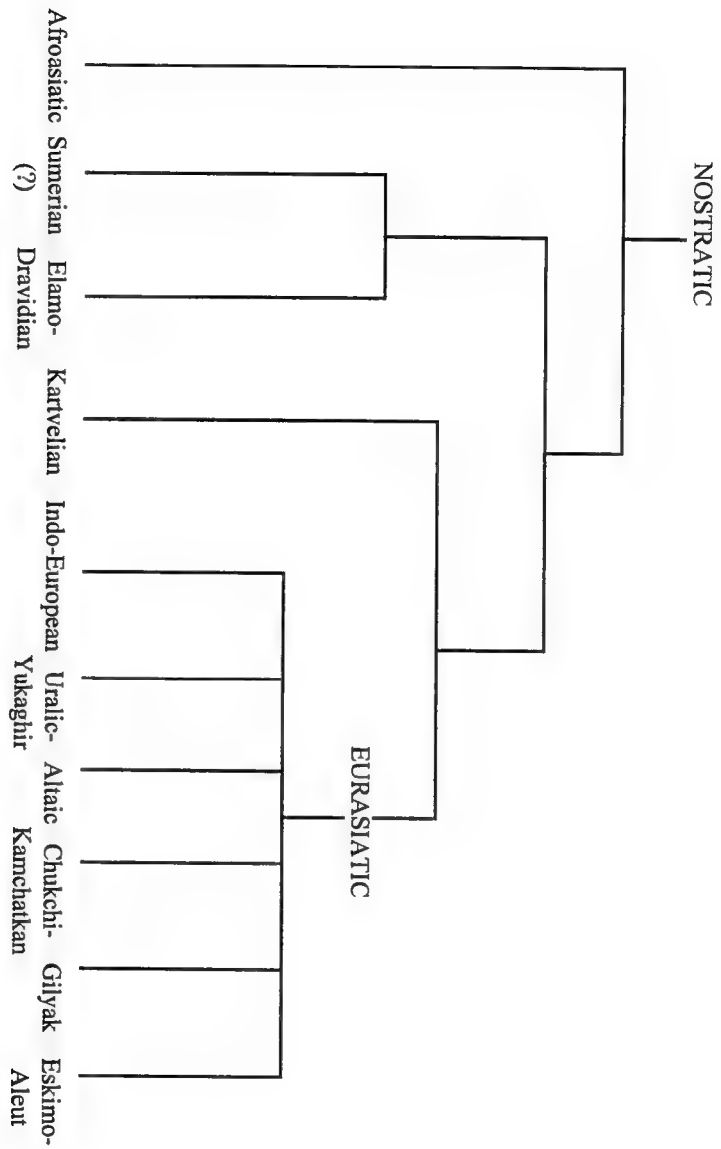


Chart 1: The Nostratic Macrofamily

Table 1: The Distribution of Nostratic Pronoun Stems

## A. Personal Pronoun Stems

Proto-Nostratic	Proto IE	Proto-Kartvelian	Proto-Afroasiatic	Proto-Uralic	Proto-Dravidian	Proto-Altaic	Sumerian
<i>*mi-/me-</i> (1st sg.)	<i>*me-/</i> <i>*mo-</i>	<i>*me-</i> , <i>*men-</i>	<i>*ma-/</i> <i>*mā-</i>	<i>*me</i>		<i>*mi</i> (> <i>*bi</i> )	<i>ma(-e)</i> , <i>me-a</i> , <i>me-e</i>
<i>*ma-/mā-</i> (1st pl. incl.)	<i>*me-/</i> <i>*mo-</i>		<i>*ma-/</i> <i>*mā-</i>	<i>*me</i>		<i>*ma-</i> (> <i>*ba-</i> )	<i>-me</i>
<i>*wa-/wā-</i> (1st pl.)	<i>*we-/</i> <i>*wo-</i> ; <i>*wey-</i>		<i>*wa-/</i> <i>*wā-</i>				
<i>*na-/nā-</i> (1st pl.)	<i>*ne-/</i> <i>*no-</i> ; <i>*n-s-</i>		<i>*na-/</i> <i>*nā-</i>		<i>*nām-</i>		
<i>*t<sup>[h]</sup>i-/</i> <i>*t<sup>[h]</sup>je-</i> (2nd sg.)	<i>*t<sup>[h]</sup>ĩ,</i> <i>*t<sup>[h]</sup>je-</i>		<i>*t<sup>[h]</sup>a-/</i> <i>*t<sup>[h]</sup>ā-</i>	<i>*te</i>		<i>*ti</i> , <i>*ta</i>	<i>za-e</i> , <i>-zu</i>

## NOTES:

1. Indo-European: The 1st sg. stem *\*mi-/me-* is used in the oblique cases (except in the Celtic branch, where it has spread into the nominative as well); the 1st pl. inclusive stem *\*ma-/mā-* is preserved in 1st person plural verb endings; the 1st pl. stem *\*wa-/wā-* is preserved as an independent 1st person plural pronoun stem and in 1st person dual and/or plural verb endings; the 2nd sg. reconstructions *\*t<sup>[h]</sup>ĩ*, *\*t<sup>[h]</sup>je-* represent later, Post-Anatolian forms.
2. Kartvelian: The 1st pl. stem *\*na-/nā-* is found in Svan *nāj* “we”.
3. Afroasiatic: The 1st sg. stem *\*mi-/me-* and 1st pl. inclusive stem *\*ma-/mā-* are found only in Chadic as independent pronouns; the 1st sg. stem *\*mi-/me-* serves as the basis of the 1st sg. verbal suffix in Highland East Cushitic; the 1st pl. stem *\*wa-/wā-* is found in Egyptian and Chadic (in Egyptian, *wy* means “I, me”).

4. Elamo-Dravidian: The 2nd sg. stem  $*t^{[h]}i-/t^{[h]}e-$  is found in Elamite in the 2nd sg. and pl. verb ending  $-t$  and in Dravidian in the Parji appositional marker  $-t$  of the 2nd sg. in pronominalized nouns and as a verb suffix of the 2nd sg.
5. Altaic: The 1st sg. stem  $*mi-$  has become *bi* "I" in the Altaic daughter languages, while the 1st pl. stem  $*ma-$  has become *ba* in Mongolian (= 1st pl. exclusive); the initial  $*m-$  is preserved in the oblique cases, however; the 2nd sg. stem  $*t^{[h]}i-$  has become *či* "you" in Mongolian.
6. Sumerian: *ma(-e)*, *me-a*, *me-e* "I" are Emesal forms;  $-me$  is a 1st pl. possessive suffix, "our";  $-zu$  is a 2nd sg. possessive suffix, "your".
7. Etruscan: The 1st sg. stem  $*mi-/me-$  is preserved in (nominative) *mi* "I", (accusative) *mini* "me"; the 2nd sg. stem may be preserved in the pronoun stem *θi*, but this is uncertain since the meaning of the Etruscan form is unknown — however, the 2nd sg. stem  $*t^{[h]}i-/t^{[h]}e-$  is clearly reflected in the Etruscan verbal imperative endings  $-ti$ ,  $-θ$ ,  $-θi$ .
8. Chukchi-Kamchatkan: The pronouns of the 1st and 2nd persons sg. and pl. are as follows in Chukchi:

	Singular	Plural
1	$\gamma\theta-m$	<b>mu-ri</b>
2	$\gamma\theta-t$	<b>tu-ri</b>

9. Gilyak: The 1st pl. inclusive stem  $*ma-/m\theta-$  is preserved in the 1st pl. inclusive pronoun *me-r* "we" (note also 1st dual *m\theta-gi*); the 2nd sg. stem  $*t^{[h]}i-/t^{[h]}e-$  is preserved in the 2nd sg. pronoun *či* "you".
10. Eskimo-Aleut: The 1st sg. stem  $*mi-/me-$  is preserved in the West Greenlandic 1st sg. relative possessive suffix  $-ma$ , while the 2nd sg. stem  $*t^{[h]}i-/t^{[h]}e-$  is preserved in the 2nd sg. absolute possessive suffix  $-(i)t$ . The plural forms are  $-ma$  and  $-tit$  respectively.



## B. Demonstrative Pronoun Stems

Proto-Nostratic	Proto IE	Proto-Kartvelian	Proto-Afroasiatic	Proto-Uralic	Proto-Dravidian	Proto-Altaic	Sumerian
<i>*sa-/sə-</i>	<i>*so-</i>	<i>*s<sub>1</sub>-</i>		<i>*sä</i>			
<i>*t[h]a-/</i> <i>*t[h]ə-</i> (proximate)	<i>*t[h]o-</i>		<i>*t[h]a-/</i> <i>*t[h]ə-</i>	<i>*ta, *tä</i>	<i>*tān-</i>	<i>*te-</i>	
<i>*t[h]u-/</i> <i>*t[h]o-</i> (distant)	<i>*t[h]o-</i>		<i>*t[h]a-/</i> <i>*t[h]ə-</i>	<i>*to</i>			
<i>*k[h]a-/</i> <i>*k[h]ə-</i>	<i>*k[h]e-,</i> <i>*k[h]o-,</i> <i>*k[h]i-</i>	<i>*-k[h]-</i>	<i>*k[h]a-/</i> <i>*k[h]ə-</i>				
<i>*dvi-/dve-</i>	<i>*-d[h]e</i>		<i>*dva-/dvə-</i>	<i>*tvi-/tve-</i>			
<i>*ʔi-/ʔe-</i>	<i>*ʔe-/ʔo-;</i> <i>*ʔey-/</i> <i>*ʔoy-/</i> <i>*ʔi-</i>	<i>*i-, *e-</i> (distant)		<i>*e</i>	<i>*ĭ-</i> (proximate)	<i>*i-, *e-</i> (proximate)	
<i>*ʔa-/ʔə-</i>	<i>*ʔe-/ʔo-</i>	<i>*a-, *e-</i> (proximate)			<i>*ā-</i> (distant)	<i>*a-</i> (distant)	
<i>*na-/nə-,</i> <i>*ni-/ne-,</i> <i>*nu-/no-</i>	<i>*ne-/no-</i>		<i>*na-/nə-</i>	<i>*na, *nä</i>  <i>*no</i>			<i>ne-en,</i> <i>ne(-e)</i>

## NOTES:

1. Indo-European: The stem *\*dvi-/dve-* is only preserved as a suffixed particle *\*-d[h]e*; the stem *\*ne-/no-* has a derivative *\*ʔe-no-/ʔo-no-*.

2. Altaic: The stem  $*t^{[h]}a-/*t^{[h]}ə-$  is used as the distant demonstrative in Altaic: Mongolian (nom. sg.) *tere* (<  $*te-r-e$ ) “that”, (nom. pl.) *tede* “those”; Tungus (Solon) *tari* “that”; Manchu *tere* “that”.
3. Sumerian: The demonstrative stem  $*ʔi-/ʔe-$  is found in *e* “hither, here”.
4. Etruscan: The proximate stem  $*t^{[h]}a-/*t^{[h]}ə-$  is preserved in *ita*, *ta* “this”; the stem  $*k^{[h]}a-/k^{[h]}ə-$  is preserved in *eca* (archaic *ika*), *ca* “this”.
5. Gilyak: The proximate stem  $*t^{[h]}a-/*t^{[h]}ə-$  is preserved in (proximate) *tid* “this”; the stem  $*k^{[h]}a-/k^{[h]}ə-$  is preserved in *kud* “that”.
6. Eskimo-Aleut: The stem  $*t^{[h]}a-/*t^{[h]}ə-$  is preserved in the Inuit (also called Inupiaq) prefix *ta-*, which may be added to any demonstrative form whose coreferent has already been focused.

## C. Relative and Interrogative Stems

Proto-Nostratic	Proto-IE	Proto-Kartvelian	Proto-Afroasiatic	Proto-Uralic	Proto-Dravidian	Proto-Altaic	Sumerian
<i>*k<sup>w</sup>[<sup>h</sup>]i-</i> <i>*k<sup>w</sup>[<sup>h</sup>]e-</i> (relative)	<i>*k<sup>w</sup>[<sup>h</sup>]e-</i> <i>*k<sup>w</sup>[<sup>h</sup>]o-</i> <i>*k<sup>w</sup>[<sup>h</sup>]i-</i>			<i>*ki, *ke</i>		<i>*ki-, *ke-</i>	
<i>*k<sup>w</sup>[<sup>h</sup>]a-</i> <i>*k<sup>w</sup>[<sup>h</sup>]ə-</i> (inter.)	<i>*k<sup>w</sup>[<sup>h</sup>]e-</i> <i>*k<sup>w</sup>[<sup>h</sup>]o-</i> <i>*k<sup>w</sup>[<sup>h</sup>]i-</i>		<i>*k<sup>w</sup>[<sup>h</sup>]a-</i> <i>*k<sup>w</sup>[<sup>h</sup>]ə-</i>	<i>*ku, *ko</i>		( <i>*ki-, *ke-</i> )	
<i>*mi-/ *me-</i> (inter.)	<i>*me-/ *mo-</i>	<i>*mi-,</i> <i>*min-</i>	<i>*ma-/ *mə-</i>	<i>*mi</i>			
<i>*ma-/ *mə-</i> (relative)	<i>*me-/ *mo-</i>	<i>*ma-</i>	<i>*ma-/ *mə-</i>	( <i>*mi</i> )			
<i>*ʔay-,</i> <i>*ʔya-</i> (relative and inter.)	<i>*ʔyo-</i>		<i>*ʔay(y)-</i>	<i>*yo</i>	<i>*yā-</i>	<i>*yā-</i>	

## NOTES:

1. Kartvelian: The relative / interrogative stem *\*ʔya-* is found in Svan (interrogative) *jär* “who?”, (relative) *jerwāj* “who”, (indefinite) *jer* “somebody, something”.
2. Altaic: The interrogative stem *\*mi-/ \*me-* is found in the Turkish interrogative particles *mi, mu, mü*.
3. Sumerian: The interrogative stem *\*mi-/ \*me-* occurs in *me-na-àm* “when?”, *me-a* “where?”, *me-šè* “where to?”. The relative / interrogative stem *\*ʔay-, \*ʔya-* may be preserved in the interrogative stems *a-ba* “who?” (animate) and *a-na* “what?” (inanimate), if *a-* represents original *\*ya-*.
4. Chukchi-Kamchatkan: The interrogative stem *\*mi-/ \*me-* is preserved in *megin* “who?”.
5. Eskimo-Aleut: The interrogative stem *\*k<sup>w</sup>[<sup>h</sup>]a-/ \*k<sup>w</sup>[<sup>h</sup>]ə-* is preserved in the Proto-Eskimo interrogative pronoun *\*ki(na)* “who?” and in *\*qaŋa* “when?”, *\*qavcit* “how many?”, *\*qaku* “when (in future)?”. The interrogative stem *\*mi-/ \*me-* is preserved in the Proto-Eskimo enclitic particle *\*mi* “what about?”.



## A Survey of the Nostratic Languages

### 2.1. Indo-European

Indo-European (in German, *Indogermanisch*) includes the following branches: Anatolian (Hittite-Luwian), Italic, Celtic, Germanic, Tocharian, Greek, Baltic, Slavic, Albanian, Armenian, and Indo-Iranian. There are also a number of poorly-attested Indo-European daughter languages such as Thracian, Phrygian, Venetic, Illyrian, Ligurian, and several others. Phrygian may be the ancestor of Armenian, but this is not absolutely certain. Indo-European languages cover all of Europe except for Basque (found in northern Spain and the southwestern corner of France), Turkish (found in the Balkans), and Uralic (Finnish, Estonian, Hungarian, and several others with extremely small numbers of speakers), modern Iran, parts of Central Asia north of Iran, Afghanistan, and northern and central India. European colonization has also spread Indo-European languages to the New World, where they have mostly supplanted Native American languages, to Australia and New Zealand, and to large parts of Africa and Asia, where they are used as languages of administration and/or learning. The extinct Hittite and Luwian were spoken in what is now Turkey, while the Tocharian dialects, which are also extinct, were spoken in what is now the Xinjiang (Sinkiang — Chinese Turkestan) Autonomous Region of the People's Republic of China.

The Indo-European language family has been subjected to thorough study for the past two centuries, and there is broad agreement among scholars on essentials, which is not to say that all problems have been resolved or that there are still not controversial issues. Several languages have extremely old records and/or literatures, such as Hittite, whose earliest records go back to around 1800 BCE, though the majority of documents date from 1500 to 1200 BCE; Mycenaean Greek, whose earliest inscriptions date from 1300 BCE; Sanskrit, with the oldest part of the Rig-Veda (written in an archaic dialect of Old Indic) probably going back as far as 1200 BCE; Avestan, the liturgical language of Zoroastrianism, whose most ancient scriptures date from about 600 BCE; Old Persian, which begins with the Achaemenid Records from about 500 to 400 BCE; and Italic, with the oldest Latin inscription dating from the sixth century BCE, and with the earliest Oscan-Umbrian records dating from about the fifth century BCE. Records do not begin to appear for the other Indo-European daughter languages until the middle to later half of the first millennium CE.

Two large dialect groups are conventionally recognized: (A) the so-called “centum” languages and (B) the so-called “satəm” languages. This dialectal division is based upon the different treatment of the gutturals in each group. In the satəm languages, sibilants (*s* and *z*), palato-alveolar fricatives (*š* and *ž*), and affricates correspond to velars in the centum languages, while velars and affricates in the former group correspond to reflexes of earlier labiovelars in the

latter group. There are other correspondences as well, found in a small number of examples, in which velars in the centum languages correspond to velars in the satəm languages. Though much attention has been devoted in the literature to this division, its significance is greatly overrated.

Morphologically, Indo-European was a highly inflected language — except for particles, conjunctions, and certain quasi-adverbial forms, all words were inflected. The basic structure of inflected words was as follows: root + suffix (one or more) + inflectional ending. A notable morphophonemic characteristic was the extensive use of a system of vocalic alternations (“Ablaut” in German) as a means to mark morphological distinctions. For nouns and adjectives, three genders, three numbers, and as many as eight cases have been reconstructed, though it is doubtful that all of these features were ancient — it is indeed possible to discern several chronological layers of development. The traditional reconstruction of the Proto-Indo-European verbal system sets up two voices, four moods, and as many as six tenses. Syntactically, Proto-Indo-European seems to have had many of the characteristics of an SOV language, though there must, no doubt, have been a great deal of flexibility in basic word order patterning.

## 2.2. Kartvelian

Kartvelian (also referred to as South Caucasian) includes the following languages: Georgian, Mingrelian, Laz, and Svan. These languages fall into two main groupings, namely, Svan, on the one hand, and Georgian, Laz, and Mingrelian, on the other. Laz and Mingrelian, in turn, form the Zan subbranch. Svan preserves many archaic characteristics. Except for Laz, which is spoken in Turkey, and the Ingilouri dialect of Georgian, which is spoken in Azerbaijan, the Kartvelian languages are spoken in the westernmost parts of the Caucasus Mountains within the borders of the Republic of Georgia.

Georgian, which has its own distinctive alphabet, has a literary tradition going back 1500 years, the earliest text being a translation of the Bible dating from the 5th century CE, only fragments of which still exist. The early literature was exclusively religious, and it was only with the so-called “Golden Age” (12th century CE) that secular literature began to appear.

A notable feature of Kartvelian phonology is the existence of complex consonant clusters — Georgian, for example, tolerates 740 initial clusters, which can have upwards of six members, and 244 final clusters. Morphologically, the Kartvelian languages are all highly inflected; Georgian, for example, has six basic grammatical cases as well as eleven secondary cases. A notable characteristic of noun declension is the distinction of ergative and absolutive cases; the ergative case is used to mark the subject of transitive verbs, while the absolutive case is used to mark direct objects and the subject of intransitive verbs. It is the dative case, however, that is used to mark the subject of so-called “inverted verbs”. There are several other departures from canonical ergative-type constructions, so much so in Mingrelian, for instance, that this language no longer possesses any true ergative features. Adjectives normally precede the nouns they modify. Postpositions are the rule. Verb morphology is particularly complicated — for

example, Deeters lists eleven distinctive functional elements that may be arrayed around a given verb root, though they may not all appear simultaneously; the overall scheme is as follows:

1. Preverb(s)
2. Personal prefix(es) (subjective or objective)
3. Character or version vowel

### ROOT

4. Passive suffix
5. Causative suffix(es)
6. Plural suffix (for nominative-absolutive noun)
7. Present stem formant
8. Imperfect suffix
9. Mood vowel
10. Personal ending
11. Subjective plural suffix

Syntactically, the predominant word order is SOV, though SVO is not uncommon.

### 2.3. Afroasiatic

Afroasiatic (also called Afrasian, Hamito-Semitic, Semito-Hamitic, Erythraic, and Lisramic) includes six branches: Semitic, Egyptian, (Libyco-)Berber, Cushitic, Omotic, and Chadic. Except for Semitic, all of the Afroasiatic languages are found in northern and eastern Africa. In ancient times, Semitic was primarily located in the Near East, but Muslim conquests beginning in the 7th century CE have spread a single Semitic language, namely, Arabic, across the greater part of northern Africa, where it has totally replaced Egyptian (Coptic) as a spoken language and has greatly restricted, but has not totally supplanted Berber, which now exists only in isolated pockets. It is estimated that there are at least 250 languages in the family.

The following chronology may be established for the branching off of the various branches of Afroasiatic: Chadic, which appears to contain many innovative features, must have been the first branch to split from the rest of the Afroasiatic speech community. The next split was between Omotic and Cushitic on the one hand and Egyptian, Berber, and Semitic on the other. Finally, first Egyptian and then Berber split off from Semitic. Within Semitic, Akkadian is the most archaic language as a whole, though Arabic preserves the original phonological structure better than any of the other Semitic languages. Tuareg is usually viewed as the most conservative Berber language, as are Beja (also called Bedawye) and Saho-Afar within Cushitic.

The study of Afroasiatic as a whole is still not far advanced. Several branches, such as Semitic and Egyptian, for example, have written records going back many millennia and have been scientifically investigated rather thoroughly, while other Afroasiatic languages are scarcely even known. Egyptian, whose earliest inscriptions date from about 3400 BCE, and Akkadian,

whose earliest inscription dates from the reign of King Lugalzagesi of Uruk (roughly 2352 to 2327 BCE), were the languages of great civilizations of antiquity, while Hebrew and Arabic are the liturgical languages of Judaism and Islam respectively. The Semitic languages exhibit great internal consistency as a group, with fairly straightforward correspondences in morphology, with close resemblance in their phonological systems, and with a large common vocabulary. In contrast, the internal divisions in the other branches, except for Egyptian, of course, which is a single language, are far more pronounced.

Proto-Afroasiatic was most likely highly inflected. It is simply not possible, however, given the present level of knowledge, to reconstruct the morphological structure of the parent language in detail, though some common features (such as the distinction of grammatical gender, the existence of two verbal conjugation systems, at least one of which, namely, the prefix conjugation, probably goes back to Proto-Afroasiatic, and a common set of pronominal stems) have been noted. Syntactically, the classical Semitic languages, Egyptian, and the Berber languages are VSO, the majority of the Cushitic languages are SOV, and most Chadic languages are SVO.

#### 2.4. Uralic-Yukaghir

As the name implies, Uralic-Yukaghir has two divisions, namely, Uralic and Yukaghir. Yukaghir consists of a single branch, while Uralic is divided into Finno-Ugrian and Samoyed. There are about 30 Uralic languages. The internal subgrouping of the Uralic languages is still not fully settled. Finno-Ugrian is thought to have become separated from Samoyed some time between 4,000 to 2,000 BCE. Yukaghir is located in northeastern Siberia, while Uralic languages are spread across northern Eurasia, from Scandinavia and central Europe in the west to north-central Siberia east of the Ural Mountains in the east.

Hungarian is the first Uralic language for which there are written records. Though the first printed text did not appear until 1527, Hungarian words are cited as early as the 9th and 10th centuries CE in Arabic and Byzantine documents. Finnish literature did not begin until 1548, with a translation of the Bible. An Estonian translation of the Bible first appeared in 1632. Yukaghir has no written literature.

Morphologically, the Uralic languages are underlyingly agglutinating, though many of the modern languages, especially Estonian, which has innovated considerably, have deviated from the original type. Proto-Uralic nominal inflection had at least three numbers (singular, dual, and plural), two grammatical cases (accusative and genitive), and three local cases (dative, locative, and ablative). Verb morphology distinguished two conjugational types, namely, subjective and objective. A large number of suffixes existed, each with its own distinctive morphological function. The original syntactic structure seems to have been SOV, and this is fairly well preserved in the modern Samoyed and Ob-Ugric languages (Ostyak [Xanty] and Vogul [Mansi]) and Cheremis (Mari). The basic word order in the other languages is SVO, though, as a general rule, word order in all of the Uralic languages is rather flexible. Hungarian stands apart, word order being determined here more by topic-comment considerations than in the other Uralic languages, so that neither SOV nor SVO can be said to be dominant. Yukaghir



is also basically agglutinating, though a certain amount of fusion has taken place in the verb. There are few prefixes but numerous suffixes. Postpositions are the rule. Syntactically, the basic word order is SOV.

## 2.5. Elamo-Dravidian

Dravidian has four branches: South Dravidian, South-Central Dravidian, Central Dravidian, and North Dravidian. Though the vast majority of Dravidian languages are concentrated in southern India, there are also pockets of Dravidian in northern India, in Pakistan, in Nepal, in northern and eastern Sri Lanka, and on the Maldiv Islands. At least 25 Dravidian languages are spoken. There is still uncertainty over the subgrouping of several languages. Elamite, which is now extinct, was located primarily in southwestern Iran, in the vicinity of the Zagros mountains as well as the adjacent plains of Khuzistan and to the south along the coast of the Persian Gulf. There is good reason to believe that Elamite once occupied all or nearly all of the Iranian plateau. The inscriptions of the Indus Valley (Harappan) Civilization may have been written in an early Dravidian language (cf. Fairservis 1992:14–23; but see also Zide—Zvelebil [eds.] 1976).

The earliest Elamite text is the “Treaty of *Narām-Sin*”, which dates from before 2200 BCE. After that, only cuneiform texts composed in a slightly deviant form of Akkadian are found until around 1300 BCE, when Elamite cuneiform texts begin to appear. The literature of the Dravidian languages, especially Tamil, is enormous. In addition to Tamil, Malayalam, Kannada, and Telugu are fully-developed literary languages, while the remaining Dravidian languages have extensive oral traditions. The oldest Tamil literature probably dates from around the 2nd or 3rd centuries CE.

Morphologically, the Dravidian languages are agglutinating. The basic root type was monosyllabic, though there is some indication that an extremely small number of bisyllabic roots may have to be reconstructed at the Proto-Dravidian level as well. This is, however, by no means certain, and it is best at present to regard Proto-Dravidian roots as exclusively monosyllabic. Inflectional categorization was achieved by means of suffixes added directly to the lexical roots or to the lexical roots extended by means of derivational suffixes. Prefixes were not used. Any vowel, long or short, could appear in a root, but only *a*, *i*, or *u* could appear in a suffix. Two basic parts of speech were differentiated in Proto-Dravidian: (A) nominals, which included nouns and adjectives, and (B) verbs. Nouns were inflected for case, person, number, and gender. Eight cases (nominative, accusative, sociative, dative, genitive, instrumental, locative, and ablative), two numbers (singular and plural), and two genders (animate and inanimate) are assumed to have existed in Proto-Dravidian. There were separate first person plural inclusive and exclusive pronouns. Verbs were inflected for tense and person. There were two tenses (past and non-past) and two moods (modal and indicative). Indeclinables existed as a separate stem type distinct from nouns and verbs. Syntactically, the basic word order was SOV. Elamite was also agglutinating. Three basic parts of speech were differentiated: (A) verbs, (B) nominals, and (C) indeclinables. The basic verbal stem form was (C)VC(V). Grammatical

categorization was achieved by means of suffixation. In the nominal stems, case relationships were mostly indicated by the use of postpositions. Verb morphology was extremely simple. Word order structure was SOV.

## 2.6. Altaic

Altaic has three divisions: Mongolian, (Manchu-)Tungus, and (Chuvash-)Turkic. Mongolian languages are spoken in Mongolia proper, in northern China in the so-called “Inner Mongolian Autonomous Region”, in eastern Siberia in areas bordering on Mongolia, and (Moghol) in Afghanistan; (Manchu-)Tungus languages are spoken in eastern Siberia and (Manchu) in northeastern China in what was formerly known as Manchuria, but which is now divided between the provinces of Heilongjiang, Jilin, and Liaoning and the Inner Mongolian Autonomous Region and is populated mostly by ethnic Chinese (Han); and (Chuvash-)Turkic languages are spoken in a large, discontinuous band, stretching from Turkey in the west, across Central Asia and western China in the middle, and on to northeastern Siberia in the east.

The oldest Turkic texts are the Orkhon inscriptions of the Kül-Tegin stele, written in a type of runic and dating from 735 CE. The earliest Mongolian inscription is only five lines long and mentions the nephew of Genghis Khan (1154-1227 CE). The longest early literary work in Mongolian is *The Secret History of the Mongols*, an imperial chronicle written in Uighur script and thought to date from around 1240 CE. Few documents in Mongolian have survived from the period between the composition of that chronicle and the 17th century. Beginning with the 17th century, however, a rich Buddhist and historical literature begins to appear. There is an extensive literature in Manchu, but most of it is of relatively recent origin and consists mainly of translations from Chinese sources.

The phonological systems of the Altaic languages are comparatively uncomplicated. Vowel harmony is a common phonological characteristic, though, in the (Chuvash-)Turkic and Mongolian branches, it is based on a front ~ back contrast, while, in the (Manchu-)Tungus branch, it is based on a high ~ low contrast. It is difficult to reconstruct the common Altaic morphological system in detail since there are deep differences among the descendant languages, the resemblances being more pronounced in vocabulary and syntax, though there are a few notable common elements, and all Altaic languages belong to the same type. Morphologically, the Altaic languages are typically agglutinating in structure. Though all Altaic languages make extensive use of suffixes, only a few of them are common to all three branches, one notable common feature here being the use of possessive suffixes. Nouns and verbs are clearly differentiated, though not as sharply as in Indo-European. There is a common stock of pronominal stems, and all Altaic languages use postpositions. Syntactically, the original structure was SOV, and this is well preserved in the modern languages, especially the Turkic languages, which are fairly strict in this regard, while more flexibility is found in the Mongolian and (Manchu-)Tungus languages.

## 2.7. Sumerian

Sumerian, which is now extinct, was spoken in southern Iraq, extending from around Babylon in its northernmost limits to the tip of the Persian Gulf in the south. From the time of the earliest texts, several dialects can be distinguished.

The earliest Sumerian inscriptions date from around 3100 BCE, though the oldest intelligible literary texts date from about 2600 BCE, and the language was probably still spoken as late as the 3rd century BCE. The Sumerian writing system was based exclusively on the cuneiform syllabary, which exhibits several marked stages of development over the course of Sumerian literary history.

Though the Sumerian phonological system was simple, there are still many uncertainties about underlying phonemic distinctions. For example, the traditional transcription shows a voiced ~ voiceless contrast in the stops, but this may well have been a voiceless unaspirated ~ voiceless aspirated contrast instead. There is still not, even after more than a century of intensive study, widespread agreement among experts in the field on many fundamental questions of Sumerian grammar. Nevertheless, the overall structure is clear. Morphologically, Sumerian was an agglutinating language. Three word classes were distinguished: (A) nouns, (B) verbs, and (C) adjectives. Though grammatical gender in the strictest sense did not exist, nouns fell into two classes, namely, animate and inanimate, which were only differentiated in 3rd person actor verbal and possessive pronoun affixes and in the relative pronoun. Ten cases and two numbers (singular and plural) were distinguished. The plural was indicated either by means of the suffix *-ene*, which was used only with animate nouns, or by reduplication. In later texts, the plural could also be indicated by the form *hi-a*, which was used with inanimate nouns and which was originally an independent word meaning 'mixed, various, unspecified', or by *-me-eš*, which was properly the enclitic copula with plural suffix. Sumerian differentiated between ergative and absolutive in nouns. In pronouns, however, the patterning was that of a nominative-accusative system. Sumerian verbs were formed by adding various prefixes and/or affixes directly to the verbal root. Verbal constructions fell into one of two categories, namely, finite forms or non-finite forms. Finite verbal stems distinguished three conjugational types: (A) the intransitive conjugation, (B) the transitive *hamtu* conjugation, and (C) the transitive *marû* conjugation. Intransitive forms were noted by means of pronominal suffixes, while transitive forms were noted by means of either prefixes, suffixes, or both. Syntactically, the basic word order was SOV.

## 2.8. Chukchi-Kamchatkan

The Chukchi-Kamchatkan family includes the following languages: Chukchi, Koryak, Kerek, Alyutor, and Kamchadal (also called Itelmen or Itelmic). Koryak, Kerek, and Alyutor are extremely close as a group, and these, in turn, are close to Chukchi. Kamchadal, which is now on the verge of extinction, stands apart from the others. The Chukchi-Kamchatkan languages are found in the extreme northeast corner of Siberia in the Chukotka and Kamchatka peninsulas.

Though written languages were developed for Chukchi, Koryak, and Kamchadal in the 1930's, only Chukchi is still being used in publications and education.

Chukchi consonantism is fairly simple, there being only 14 distinct consonant phonemes, while that of Koryak is more complex than Chukchi, and that of Kamchadal is even more complex than either Chukchi or Koryak, containing both plain and glottalized stops, voiced and voiceless fricatives, and three lateral phonemes. A notable characteristic of Chukchi phonology is a system of vowel harmony based on a height contrast. In this system, vowels are classified as either "dominant" (*e, a, o*) or "recessive" (*i, e, u*) — note that the vowel *e* appears in both series. The presence of a dominant vowel in any morpheme in a word conditions the change of any recessive vowels in the word to their corresponding dominant counterparts. A similar system is partially preserved in Koryak.

The Chukchi-Kamchatkan languages are agglutinating. In Chukchi, however, some fusion has occurred, particularly in the verb. Chukchi nouns distinguish singular from plural. There are relatively few cases. Typical of all Chukchi-Kamchatkan languages is case marking of subjects and direct objects on the basis of an ergative-absolutive system. Chukchi and Koryak also exhibit a certain degree of incorporation, though it is not as extensively used as in Eskimo-Aleut. Verbs clearly distinguish between transitive and intransitive, with the ergative being used in conjunction with transitive verbs. Chukchi employs postpositions exclusively. Chukchi word order is rather free, with OV being slightly more predominant than VO.

## 2.9. Gilyak

Gilyak (also called Nivkh) is usually considered to be a single language, but the two main dialects, namely, the Amur dialect, on the one hand, and the Sakhalin (or Eastern) dialect, on the other, are not mutually intelligible. Of the two, the Sakhalin dialect is more archaic. The Gilyaks are found on the lower reaches of the Amur River and on Sakhalin Island. Though a written language was developed for the Amur dialect in the 1930's, next to nothing has appeared in it.

Gilyak tolerates highly complex consonant clusters. Furthermore, initial consonants undergo various alternations, which are conditioned both by the final segment of the preceding word and by syntactical considerations. In contrast, the vowel system is fairly simple.

Gilyak morphology is typologically similar to that found in the Altaic languages. Noun morphology is uncomplicated. Only a few cases are distinguished, including several basic spatial cases. Singular and plural are also distinguished. A system of numeral classifiers has been developed. In the pronouns, there are separate forms for first person dual and plural, while the first person plural, in turn, has a distinction between inclusive (*mer*) and exclusive (*ńəŋ*). Verb morphology is also simple, though one notable feature worth mentioning is the wide range of non-finite gerunds that can occur. Gilyak possesses postpositions but no prepositions. Basic word order structure is SOV.

## 2.10. Eskimo-Aleut

As the name implies, Eskimo-Aleut has two branches: Eskimo and Aleut. The Aleut dialects are mutually intelligible. However, this is not the case with the Eskimo dialects. Two main Eskimo dialect groups are distinguished, namely, Yupik and Inuit (also called Inupiaq). Yupik speakers are concentrated in southwestern Alaska, beginning at Norton Sound and extending southward along the western and southern coasts and inland. An extremely small enclave of Yupik speakers is found in northeastern Siberia as well. Inuit speakers are found north of Norton Sound all the way to the northern coast of Alaska and extending eastward across all of the northernmost parts of Canada and on into Greenland. Aleut is spoken on the Aleutian Islands and the Commander Islands.

The Proto-Eskimo vowel system was relatively simple (Proto-Eskimo had only four vowels: *\*i*, *\*a*, *\*u*, *\*ə* — phonemic length probably did not exist), while the consonant system resembled that of Proto-Uralic. The phonological systems found in the Eskimo dialects are far more complex than that of Proto-Eskimo. In contrast, Aleut phonology is less complicated. Nouns differentiate between singular, dual, and plural. The case system is reminiscent of that found in Chukchi-Kamchatkan, though it differs by using suffixes to indicate the plural. The verb makes no tense distinctions but has four moods and separate transitive and intransitive conjugations. The absolutive case is used as the subject of intransitive verbs and as the direct object of transitive verbs, while a different case is used as the subject of transitive verbs. Conjunctions and other particles are absent in most Eskimo dialects. A notable characteristic is that incorporation has been developed to such an extent that whole phrases may be expressed in a single word.



# 3

## A Brief History of the Reconstruction of the Proto-Indo-European Phonological System

### 3.1. August Schleicher

Although the comparative-historical study of the Indo-European languages did not begin with August Schleicher, he was the first to attempt, in the first volume (1861 [4th edition 1876]) of his (in English translation) *Compendium of the Comparative Grammar of the Indo-European Languages*, to reconstruct the phonological system of the Indo-European parent language. Earlier scholars — especially Rasmus Rask and Jacob Grimm — had worked out the fundamental sound correspondences between the various daughter languages, and the need to reconstruct the phonological system of the parent language had been recognized as early as 1837 by Theodor Benfey, but no one prior to Schleicher had actually undertaken the task. Schleicher's reconstruction is as follows (1876:10):

	unaspirated		aspirated	spirants		nasals	r-sound
	voiceless	voiced	voiced	voiceless	voiced	voiced	voiced
guttural:	k	g	gh				
palatal:				j			
lingual:							r
dental:	t	d	dh	s		n	
labial:	p	b	bh	v		m	

### 3.2. The Neogrammmarian Period

Schleicher's reconstruction remained the accepted standard until the late 1870's, when a series of brilliant discoveries were made in rapid succession (cf. Delbrück 1974:55—61; Pedersen 1931:277—310):

1. First, there was the discovery of "The Law of Palatals" (*Das Palatalgesetz*) (cf. Collinge 1985:133—142; Pedersen 1931:277—282), which established the antiquity of the vowel systems found in Greek and Latin and recognized, for the first time, that the Sanskrit vowel system was an innovation in which earlier \*ē, \*ō, \*ā had merged into ā. This realization also led to the reconstruction of three distinct series of tectals (gutturals) in Proto-Indo-European:

- (1) palatals:  $*\tilde{k}$ ,  $*\tilde{g}$ ,  $*\tilde{g}h$ ; (2) the so-called “pure velars”:  $*q$ ,  $*g$ ,  $*gh$ ; and (3) labiovelars:  $*q^w$ ,  $*g^w$ ,  $*g^wh$ .
2. The next major discovery was that Proto-Indo-European had syllabic nasals and liquids:  $*m$ ,  $*n$ ,  $*l$ ,  $*r$  (cf. Pedersen 1931:283—285).
  3. Following these discoveries, the system of vowel gradation (*Ablaut*) became clear, and the original patterning was worked out in precise detail (cf. Brugmann 1904:138—150; Hübschmann 1885:71—180; Meillet 1964:153—168; Pedersen 1931:285—290; Szemerényi 1990:86—97).
  4. Finally, Verner’s Law (cf. Collinge 1985:203—216; Pedersen 1931:282—283) explained several annoying exceptions to the expected developments of the earlier voiceless stops in Proto-Germanic. First, the voiceless stops became voiceless fricatives in Proto-Germanic:  $*p$ ,  $*t$ ,  $*k$ ,  $*k^w > *f$ ,  $*\theta$ ,  $*\chi$ ,  $*\chi^w$ . Then, at a later date, these voiceless fricatives became the voiced fricatives  $*\beta$ ,  $*\delta$ ,  $*\gamma$ ,  $*\gamma^w$  respectively except (A) initially and (B), in some cases, medially between vowels. The problem was that both voiceless and voiced fricatives appeared medially between vowels, and the choice between voiceless fricatives, on the one hand, and voiced fricatives, on the other hand, appeared to be entirely random. What Verner figured out was that the patterning was tied to the original position of the accent — the voiceless fricatives appeared medially between vowels when the accent had originally fallen on the contiguous preceding syllable. If the accent had originally fallen on any other syllable, however, voiced fricatives appeared.

By the end of the nineteenth century, the phonological system reconstructed by the Neogrammarians was widely accepted as being a fairly accurate representation of what had existed in Proto-Indo-European. To this day, the Neogrammarian system, or slightly modified versions thereof, commands a great deal of respect and has many defenders.

The Neogrammarian reconstruction of the Proto-Indo-European phonological system, which was arrived at through strict adherence to the principle that sound laws admit no exceptions, was notable for its large inventory of stops and its extremely small inventory of fricatives. The stop system consists of a four-way contrast of (A) plain voiceless stops ~ (B) voiceless aspirated stops ~ (C) plain voiced stops ~ (D) voiced aspirated stops. This system is extremely close to the phonological system of Old Indic (cf., for example, Gonda 1966:9; Mayrhofer 1972:17). Actually, there were two competing versions of the Proto-Indo-European phonological system at this time: (A) the German system (cf. Brugmann 1904:52), which was phonetically based, and (B) the French system (cf. Meillet 1964:82—145), which was phonologically based (cf. Szemerényi 1972:122). It must be pointed out that, in spite of its wide acceptance, a small group of scholars has, from time to time, questioned the validity of the Neogrammarian reconstruction, at least in part (for a discussion of some of the opposing views, cf. Hopper 1977b:57—72 and Szemerényi 1972:122—136).

Brugmann’s (1904:52) reconstruction is as follows:



Monophthongs:	e ē	o ō	a ā	i ī	u ū	ə	
Diphthongs:	eĭ ēĭ	oĭ ōĭ	aĭ āĭ	əĭ	eu ēu	ou ōu	au āu
Semivowels:	i̯	u̯	(j ?)				
Liquids and Nasals:		l	r	m	n	ñ	ŋ
Syllabic Liquids and Nasals:		l̥ l̥̄	r̥ r̥̄	m̥ m̥̄	n̥ n̥̄	ñ̥ ñ̥̄	ŋ̥ ŋ̥̄
Occlusives:	p t k q qʷ	ph th kh qh qʷh	b d g gʷ	bh dh gh gh gʷh	(labial) (dental) (palatal) (pure velar) (labiovelar)		
Spirants:	s	sh	z	zh	þ	ph	ð ðh

Brugmann reconstructed five short vowels and five long vowels plus a reduced vowel, the so-called “schwa indogermanicum” (also called “schwa primum”), written \*ə, which alternated with so-called “original” long vowels. A full set of diphthongs was posited as well. Finally, the system contained the semivowels \*i̯ and \*u̯, a series of plain and aspirated spirants, several nasals, and the liquids \*l and \*r. The nasals and liquids were unique in their ability to function as syllabics or nonsyllabics, depending upon their environment. They were nonsyllabic (A) when between vowels or initially before vowels, (B) when preceded by a vowel and followed by a consonant, and (C) when preceded by a consonant and followed by a vowel. The syllabic forms arose in early Indo-European when the stress-conditioned loss of former contiguous vowels left them between two nonsyllabics.

It should be noted here that the Proto-Indo-European vowels were subject to various alternations that were partially correlated with the positioning of the accent within a word. These vowel alternations served to indicate different types of grammatical formations. The most common alternation was the interchange between the vowels \*e and \*o in a given syllable. There was also an alternation among lengthened-grade vowels, normal-grade vowels, and reduced-grade and/or zero-grade vowels (for details, cf. Brugmann 1904:138—150; Hübschmann 1885).

Meillet’s reconstruction differs from that of Brugmann in several important respects. First, Meillet (1964:91—95) reconstructs only two tectal (guttural) series, namely, palatals and labiovelars — he does not recognize a separate pure velar series.

Brugmann posited a separate series of voiceless aspirates for Proto-Indo-European on the basis of an extremely small, and somewhat controversial, set of correspondences from Indo-Iranian, Armenian, and Greek. In the other daughter languages, the voiceless aspirates and plain voiceless stops have the same treatment, except that *\*kh* appears to have become *x* in a small number of examples in Slavic — however, these examples are better explained as borrowings from Iranian rather than as due to regular developments in Slavic (cf. Carlton 1991:95). As early as 1891, in a paper read before the Société de Linguistique de Paris, the Swiss scholar Ferdinand de Saussure suggested that the voiceless aspirates might have had a secondary origin, arising from earlier clusters of plain voiceless stop plus a following “coefficient sonantique”. This idea was taken up by Meillet (1964:90—91), who pointed out the great rarity of the voiceless aspirates, noting in particular that the dental voiceless aspirate *\*th* often appears to be the result of aspiration of a plain voiceless dental by a following *\*ə*: *\*t + \*ə > \*th*, at least in Sanskrit. Current thinking on the part of a great many linguists is that the series of voiceless aspirates reconstructed by Brugmann and other Neogrammarians for the Indo-European parent language should be removed, being secondarily derived in the individual daughter languages (cf. Bomhard—Kerns 1994:39 for references). The main opponent of this view is Oswald Szemerényi, who has argued for the reinstatement of the voiceless aspirates and, consequently, for a return to the four-stop system (plain voiceless ~ voiceless aspirated ~ plain voiced ~ voiced aspirated) of the Neogrammarians. We will return to this problem later.

Particularly noteworthy is Meillet’s (1964:105—126) treatment of the resonants. Here, he considers *\*i* and *\*u* to be the syllabic allophones of *\*y* (Brugmann’s *\*ĵ*) and *\*w* (Brugmann’s *\*ǵ*) respectively and classes them with the resonants, thus: *\*i/\*y*, *\*u/\*w*, *\*ṃ/\*m*, *\*ṇ/\*n*, *\*ṛ/\*r*, *\*ḷ/\*l*, that is to say that he does not consider *\*i* and *\*u* to be independent phonemic entities. The diphthongs are analyzed by Meillet as clusters of (A) vowel plus nonsyllabic resonant and (B) nonsyllabic resonant plus vowel.

Meillet’s (1964:82—145) reconstruction may be represented as follows:

Vowels:	e	o	a			
	ē	ō	ā			
Resonants:	i/y	u/w	ṃ/m	ṇ/n	ṛ/r	ḷ/l ə
Occlusives:	p	ph	b	bh	(labial)	
	t	th	d	dh	(dental)	
	k <sub>l</sub>	k <sub>l</sub> h	g <sub>l</sub>	g <sub>l</sub> h	(palatal)	
	k <sup>w</sup>	k <sup>w</sup> h	g <sup>w</sup>	g <sup>w</sup> h	(labiovelar)	
Sibilant:	s					

### 3.3. The Twentieth Century to 1970

In 1878, the young Ferdinand de Saussure attempted to show that so-called “original” long vowels were to be derived from earlier sequences of short vowel plus a following “coefficient sonantique”. In 1927, Jerzy Kuryłowicz demonstrated that reflexes of de Saussure’s “coefficients sonantiques” were preserved in Hittite. On this basis, a series of consonantal phonemes, commonly called “laryngeals”, was then posited for Proto-Indo-European. Kuryłowicz, in particular, set up four laryngeals, which he writes  $*\varrho_1$ ,  $*\varrho_2$ ,  $*\varrho_3$ ,  $*\varrho_4$ . The overwhelming majority of scholars currently accept some form of this theory, though there is still no general agreement on the number of laryngeals to be reconstructed for Proto-Indo-European or on their probable phonetic values (for details on the Laryngeal Theory, cf. Bomhard—Kerns 1994:47—56, section 2.2; Keiler 1970; Lindeman 1987; Winter [ed.] 1965). On the basis of comparison with other Nostratic languages as well as internal considerations within Indo-European, I would assign the following phonetic values to the laryngeals:

$*\varrho_1$	=	Glottal stop /ʔ/
$*\varrho_2$	=	Voiceless and voiced multiply-articulated pharyngeal/laryngeal fricatives /ħħ/ and /ʕʕ/
$*\varrho_3$	=	Voiceless and voiced multiply-articulated pharyngeal/laryngeal fricatives /ħh/ and /ʕf/
$*\varrho_4$	=	Voiceless glottal fricative /h/

With the reduction of the gutturals to two series, the removal of the traditional voiceless aspirates, the reanalysis of the diphthongs as clusters of vowel plus nonsyllabic resonant and nonsyllabic resonant plus vowel, and the addition of laryngeals, we arrive at the system of Lehmann (1952:99):

1. Obstruents:	p	t	k	k <sup>w</sup>
	b	d	g	g <sup>w</sup>
	b <sup>h</sup>	d <sup>h</sup>	g <sup>h</sup>	g <sup>wh</sup>
		s		
2. Resonants:	m	n		
	w	r	l	y
3. Vowels:	e	a	o	ε
	i·	e·	a·	o·
4. Laryngeals:		x	γ	h ?

Now, the removal of the traditional voiceless aspirates creates a problem from a typological point of view. Data collected from the study of a great number of the world’s languages have failed to turn up any systems in which voiced aspirates are added to the pair plain voiceless stop ~ plain voiced stop unless there are also corresponding voiceless aspirated stops in

the system (cf. Jakobson 1971[1957]:528; Martinet 1970:115). This is an important point, affecting the entire structure of the traditional reconstruction. In order to rectify this imbalance, several scholars have sought typological parallels with systems such as those found, for example, in Javanese. In these rare systems, there is a three-way contrast, sometimes described as (A) plain (unaspirated) voiceless ~ (B) voiced ~ (C) "voiced aspirated": /T/ ~ /D/ ~ /D<sup>h</sup>/. However, this interpretation is based upon a lack of understanding of the phonetics involved. Series (C) in such systems is, in reality, voiceless with breathy release — something like /t<sup>h</sup>/ — and not "voiced aspirated" (cf. Maddieson 1984:207).

As we have seen from the preceding discussion, Lehmann's reconstruction is problematical from a typological point of view. However, from a structural point of view, it presents an accurate analysis of Proto-Indo-European phonemic patterning.

Several scholars have proposed various solutions in an attempt to eliminate the problems caused by the removal of the traditional voiceless aspirates. For example, Jerzy Kuryłowicz (1964:13) tried to show that the voiced aspirates were not phonemically voiced. However, this interpretation seems unlikely in view of the fact that the daughter languages are nearly unanimous in pointing to some sort of voicing in this series in the Indo-European parent language (for correspondences and examples, cf. Meillet 1964:86—88). The main exceptions are Tocharian and possibly Hittite (at least according to some scholars). In each case, however, it is known that the voicing contrast was eliminated and that the reflexes found in these daughter languages do not represent the original state. The Greek and Italic developments are a little more complicated: in these daughter languages, the traditional voiced aspirates were devoiced, thus becoming voiceless aspirates. Then, in Italic, the resulting voiceless aspirates became voiceless fricatives:

$$b^h, d^h, g^h, g^{wh} > p^h, t^h, k^h, k^{wh} > f, \theta, \chi, \chi^w$$

According to Eduard Prokosch (1938:39—41), on the other hand, the voiced aspirates of traditional grammar were really the voiceless fricatives \**φ*, \**θ*, \**χ*, \**χ*<sup>w</sup> (= \**bh*, \**dh*, \**gh*, \**g*<sup>wh</sup> respectively). This interpretation seems unlikely for two reasons: (A) as noted above, the daughter languages point to voicing in this series in Proto-Indo-European, and (B) the daughter languages point to stops as the original mode of articulation and not fricatives. This latter objection may also be raised against the theory — advocated by Alois Walde (1897:491) and Johann Knobloch (1965:163) — that the voiced aspirates may have been the voiced fricatives \**β*, \**δ*, \**γ*, \**γ*<sup>w</sup> (= \**bh*, \**dh*, \**gh*, \**g*<sup>wh</sup> respectively).

Next, there is the theory put forth by Louis Hammerich (1967:839—849) that the voiced aspirates may have been emphatics. Hammerich does not define what he means by the term "emphatics" but implies that they are to be equated with the emphatics of Semitic grammar. Now, in Arabic, the emphatics have been described as either uvularized (cf. Catford 1977:193) or pharyngealized (cf. Al-Ani 1970:44—58; Catford 1977:193; Chomsky—Halle 1968:306). Such sounds are always accompanied by backing of adjacent vowels (cf. Dolgopolsky 1977:1—13; Hyman 1975:49; Ladefoged 1971:63—64), as noted, for example, by Laver (1994:328):

Retraction of the body and root of the tongue into the pharynx in pharyngealized segments tends both to retract the position of vocoids, and to lower them.

In Proto-Indo-European, all vowels were found in the neighborhood of the voiced aspirates, and there is no indication that any of these sounds had different allophones here than when contiguous with other sounds. Had the voiced aspirates been emphatics such as those found in Arabic, they would have caused backing of contiguous vowels, and this would be reflected in the daughter languages in some manner. However, this is not the case. If, on the other hand, the emphatics had been ejectives such as those found in the Modern South Arabian languages, the Semitic languages of Ethiopia, and several Eastern Neo-Aramaic dialects (such as, for instance, Urmian Nestorian Neo-Aramaic and Kurdistan Jewish Neo-Aramaic), the question arises as to how these sounds could have developed into the voiced aspirates needed to explain the developments in Indo-Iranian, Greek, Italic, and Armenian.

Oswald Szemerényi (1967:65—99) was one of the first to bring typological data to bear on the problem of reconstructing the Proto-Indo-European phonological system. Taking note of Jakobson's (1971[1957]:528) remark that:

...no language adds to the pair /t/ ~ /d/ a voiced aspirate /dʰ/ without having its voiceless counterpart /tʰ/...

Szemerényi reasoned that since Proto-Indo-European had voiced aspirates, it must also have had voiceless aspirates. Though on the surface this reasoning appears sound, it puts too much emphasis on the typological data and too little on the data from the Indo-European daughter languages. As mentioned above, there are very cogent reasons for removing the traditional voiceless aspirates from Proto-Indo-European, and these reasons are not easily dismissed. Szemerényi also tried to show that Proto-Indo-European had only one laryngeal, namely, the voiceless glottal fricative /h/. Szemerényi's (1967:96—97) reconstruction is as follows:

p	t	k'	k	k <sup>w</sup>	
p <sup>h</sup>	t <sup>h</sup>	k' <sup>h</sup>	k <sup>h</sup>	k <sup>wh</sup>	
b	d	g'	g	g <sup>w</sup>	
b <sup>h</sup>	d <sup>h</sup>	g' <sup>h</sup>	g <sup>h</sup>	g <sup>wh</sup>	
		y	w		
	l	r	m	n	
		s	h		
a	e	o	i	u	ə
ā	ē	ō	ī	ū	

(also the sequences ah eh oh ih uh)

Szemerényi does not include diphthongs in his reconstruction since their “phonemic status is disputed”.

Szemerényi’s reconstruction is in fact typologically natural, and he has defended it strongly right up to the present day (cf. Szemerényi 1990:37—72). His system — as well as that of the Neogrammarians, it may be added — is merely a projection backward in time of the Old Indic phonological system. In certain dialects of “Disintegrating Indo-European” (specifically, in the early development of Pre-Indo-Iranian, Pre-Greek, and Pre-Italic), such a system no doubt existed in point of fact.

Next, there are the proposals put forth by Joseph Emonds (1972). According to Emonds, the plain voiced stops of traditional Proto-Indo-European are to be reinterpreted as plain lax voiceless stops, while the traditional plain voiceless stops are taken to have been tense and aspirated:

Lehmann				Emonds			
p	t	k	k <sup>w</sup>	=	ph	th	kh
b	d	g	g <sup>w</sup>	=	p	t	k
b <sup>h</sup>	d <sup>h</sup>	g <sup>h</sup>	g <sup>w<sup>h</sup></sup>	=	bh	dh	gh

Emonds regards the voicing of the lax stops as common to a Central innovating area and the appearance of voiceless stops in Germanic, Armenian, and Hittite as relics.

Similar proposals were put forth by Toby D. Griffen (1988:162—189). According to Griffen, Proto-Indo-European had a three-member stop system, which he represents as (using the dentals for illustration) \*[d], \*[t], \*[t<sup>h</sup>] (media, tenuis, aspirata). While this system was maintained in Germanic with only minor changes, a series of sound-shifts in the other Indo-European daughter languages completely restructured the inherited system. Thus, Germanic emerges as the most conservative daughter language in its treatment of the Indo-European stop system.

There are other problems with the traditional reconstruction besides the typological difficulties caused by the removal of the voiceless aspirates. Another problem, noted in most of the standard handbooks (cf., for example, Adrados 1975.I:108; Burrow 1973:73; Krause 1968:116—117; Lehmann 1952:109; Meillet 1964:84 and 89), is the statistically low frequency of occurrence — perhaps total absence — of the traditional voiced labial stop \*b. We may cite Meillet’s (1964:89) comments on this matter:

*b* is relatively rare; it does not occur in any important suffix nor in any ending; it is secondary in some of the words where it is found, thus Skt. *pībāmi* “I drink”, OIr. *ibim* “I drink”, Lat. *bibō* (with initial *b* through assimilation) is an ancient reduplicated form in view of Skt. *pāhi* “drink”, Gk. *πιῖ*, OCS. *piti* “to drink”, Lat. *pōculum* “cup”; ...other words are imitative, thus Gk. *βαρβαρος*, Lat. *balbus*, etc.; still others are limited to a few languages and give the impression of being recent borrowings.

The marginal status of *\*b* is difficult to understand from a typological viewpoint and is totally unexplainable within the traditional framework. This problem was investigated in 1951 by the Danish scholar Holger Pedersen. Pedersen noted that, in natural languages having a voicing contrast in stops, if there is a missing member in the labial series, it is /p/ that is missing and not /b/. This observation led Pedersen to suggest that the traditional plain voiced stops might originally have been plain voiceless stops, while the traditional plain voiceless stops might have been plain voiced stops:

Brugmann						Pedersen				
b	d	ġ	g	g <sup>u</sup>	=	Ø	t	ġ	k	k <sup>w</sup>
p	t	ġ	q	q <sup>u</sup>	=	b	d	ġ	g	g <sup>w</sup>

Later shifts would have changed the earlier plain voiced stops into the traditional plain voiceless stops and the earlier plain voiceless stops into the traditional plain voiced stops. In a footnote in his 1953 *BSL* article entitled “Remarques sur le consonantisme sémitique”, André Martinet (1975[1953]:251—252, fn. 1) objected to this “musical chairs” rearrangement:

Since there are extremely few examples of the Common Indo-European phoneme reconstructed “analogically” as *\*b*, it is tempting to diagnose a gap there as well, as the late Holger Pedersen did in *Die gemeinindoeuropäischen und die vorindoeuropäischen Verschlusslaute*, pp. 10-16. But, instead of assuming, as did Pedersen, the loss of a Pre-Indo-European *\*p* followed by a musical-chairs [rearrangement] of *mediae* and *tenues*, one should be able to see in the series *\*d*, *\*g*, *\*g<sup>w</sup>* the result of evolution from an earlier series of glottalics, without labial representative.

This appears to be the first time that anyone had proposed reinterpreting the plain voiced stops of traditional Proto-Indo-European as glottalics. Martinet’s observation, however, seems to have influenced neither Gamkrelidze and Ivanov nor Hopper, each of whom arrived at the same conclusion independently of Martinet as well as independently of each other.

In the preceding discussion, only the more well-known counterproposals were mentioned, and only the briefest of explanations were given. More details could easily have been given. Insights gained from typological studies, for example, could have been used to strengthen the arguments: no phoneme stands alone; it is, rather, an integral part of the total system. Each and every phoneme is tied to the other phonemes in the system by discrete interrelationships — to disturb one phoneme is to disturb (at least potentially) the entire system. This is basically the message that Jakobson and Martinet were trying to bring home. All too often, this message is ignored. Moreover, the interrelationships are not only synchronic, they are diachronic as well.

### 3.4. The Glottalic Theory

Discovery — perhaps “rediscovery” would be a better term since Martinet’s insightful remarks first appeared in 1953 — of what has come to be known as the “Glottalic Theory” came

from two separate sources, each working independently. On the one-hand, the British-born American Germanist Paul J. Hopper hit upon the notion that Proto-Indo-European may have had a series of glottalized stops while he was a student at the University of Texas and taking a course in Kabardian from Aert Kuipers. Hopper went on about other business after graduation, waiting five years before putting his ideas into writing. On the other hand, the Georgian Indo-Europeanist Thomas V. Gamkrelidze, a native speaker of a language containing glottalics (Georgian), had been investigating the typological similarities between Proto-Kartvelian and Proto-Indo-European (cf. Gamkrelidze 1966 and 1967). It did not take Gamkrelidze long to realize the possibility that Proto-Indo-European might also have had glottalized stops. Gamkrelidze, in a joint article with the now-immigrated Russian Indo-Europeanist Vjačeslav V. Ivanov, was the first to make it into print (Gamkrelidze—Ivanov 1972). Hopper might have beat them into print had his paper on the subject not been rejected by the journal *Language*. He was then obliged to search for another journal willing to publish his views, which finally happened in 1973. Then, in 1973, Gamkrelidze and Ivanov published a German language version of their 1972 paper.

Hopper (1973:141—166) proposed reinterpreting the plain voiced stops of traditional Proto-Indo-European — Lehmann's *\*b*, *\*d*, *\*g*, *\*g<sup>w</sup>* — as glottalized stops (ejectives), that is, (*\*p'*), (*\*t'*), (*\*k'*), (*\*k'<sup>w</sup>*) respectively, because the traditional plain voiced stops

show many of the typological characteristics of glottalized stops (ejectives), e.g. they are excluded from inflectional affixes, they may not cooccur with another in the same root, etc.

Hopper also reinterpreted the traditional voiced aspirates as murmured stops.

Gamkrelidze—Ivanov (1972:15—18 and 1973:150—156) also reinterpret the traditional plain voiced stops as ejectives, but, unlike Hopper, they reinterpret the traditional plain voiceless stops as voiceless aspirates. They make no changes to the traditional voiced aspirates. They point out, however, that the feature of aspiration is phonemically irrelevant in a system of this type. In a later article, Gamkrelidze (1976:403) gives the following reconstruction:

Lehmann				Gamkrelidze		
b	b <sup>h</sup>	p	=	p'	bh/b	ph/p
d	d <sup>h</sup>	t	=	t'	dh/d	th/t
g	g <sup>h</sup>	k	=	k'	gh/g	kh/k
g <sup>w</sup>	g <sup>wh</sup>	k <sup>w</sup>	=	k' <sup>w</sup>	g <sup>w</sup> h/g <sup>w</sup>	k <sup>w</sup> h/k <sup>w</sup>

According to Gamkrelidze (1981:607), such a system exists in several modern Eastern Armenian dialects (however, this is challenged by Jahukyan 1990:7—8).

Many of the points discussed above by Gamkrelidze were also noted by Hopper, in particular the root structure constraint laws (cf. Hopper 1973:158—161). Hopper also discusses possible trajectories of the new system in various Indo-European daughter languages.



The system of Gamkrelidze, Hopper, and Ivanov has several clear advantages over the traditional reconstruction of the Proto-Indo-European stop system:

1. Their reinterpretation of the traditional plain voiced stops as glottalics (ejectives) makes it easy to account for the fact that the phoneme traditionally reconstructed as *\*b* was highly marked in the system, being characterized by an extremely low frequency of occurrence (if it even existed at all). Such a low frequency distribution is extremely uncharacteristic of the patterning of the voiced labial stop /b/ in natural languages having a voicing contrast in stops, but it is fully characteristic of the patterning of the labial ejective /p'/ (cf. Gamkrelidze 1981:605—606; Greenberg 1970:127).
2. Not only does the reinterpretation of the traditional voiced stops as ejectives easily account for the frequency distribution of these sounds, it also explains the fact that they were used only very infrequently in inflectional affixes and pronouns, since this type of patterning is characteristic of the way ejectives behave in natural languages having such sounds.
3. For the first time, the root structure constraint laws can be credibly explained. These constraints turn out to be a simple voicing agreement rule with the corollary that two glottalics cannot cooccur in a root. Hopper (1973:160) cites Hausa, Yucatec Mayan, and Quechua as examples of natural languages exhibiting a similar constraint against the cooccurrence of two glottalics. Akkadian may be added to this list as well if we take Geers' Law to be a manifestation of such a constraint (cf. Bomhard 1984:135).
4. The so-called Germanic and Armenian "consonant shifts" (in German, "Lautverschiebungen"), which can only be accounted for very awkwardly within the traditional framework (cf. Emonds 1972:108—122), turn out to be mirages. Under the revised reconstruction, these branches (perhaps along with the poorly-attested Thracian and Phrygian as well) turn out to be relic areas.

In 1984, Gamkrelidze and Ivanov published their monumental joint monograph entitled *Индоевропейский язык и индоевропейцы: реконструкция и историко-типологический анализ праязыка и протокультуры* [*Indo-European and the Indo-Europeans: A Reconstruction and Historical-Typological Analysis of a Proto-Language and a Proto-Culture*] (an English translation of this work has just been published by Mouton de Gruyter [1995]). As is to be expected, this massive work (2 volumes, 1,328 pages) contains the most detailed discussion of the Glottalic Theory that has yet appeared. The book also contains trajectories of the revised Proto-Indo-European phonological system in the various Indo-European daughter languages, original proposals on the morphological structure of the Indo-European parent language, an exhaustive treatment of the Proto-Indo-European lexicon, and a new theory about the homeland of the Indo-Europeans. One of the most novel proposals put forth in the book is that Proto-Indo-European may have had labialized dentals and a labialized sibilant. Gamkrelidze—Ivanov also posit postvelars for Proto-Indo-European. Their complete reconstruction is as follows (cf. Gamkrelidze—Ivanov 1984.I:134):

	I.	II.	III.										
1.	(p')	b[h]	p[h]										
2.	t'	d[h]	t[h]				t'°	d[h]°	t[h]°				
3.	k'	g[h]	k[h]	ḱ'	ǵ[h]	ḱ[h]	k'°	g[h]°	k[h]°	s	ṣ	ś°	
4.	q'	-	q[h]										

Note: The consonants enclosed in the box are considered to be the most reliably reconstructed.

It is not surprising that the new look of Proto-Indo-European consonantism proposed by Gamkrelidze—Ivanov has a distinctly Caucasian appearance about it.

Though the Glottalic Theory has attracted a good deal of attention over the past decade and has gained widespread acceptance (cf. Salmons 1993; Schwink 1994:59—61 and 62-64; Vennemann [ed.] 1989), it should be noted that there is still some disagreement about the make-up of the traditional voiceless stops and voiced aspirates. Hopper (1973:141—166), for example, reinterprets the traditional voiced aspirates as murmured stops, making no changes to the traditional plain voiceless stops. His system is as follows:

Lehmann					Hopper			
p	t	k	k <sup>w</sup>	=	p	t	k	k <sup>w</sup>
b	d	g	g <sup>w</sup>	=	p'	t'	k'	k' <sup>w</sup>
b <sup>h</sup>	d <sup>h</sup>	g <sup>h</sup>	g <sup>wh</sup>	=	<u>b</u>	<u>d</u>	g	g <sup>w</sup>

This differs from the views of Gamkrelidze—Ivanov, who, as noted above, regard the traditional plain voiceless stops as voiceless aspirates, while making no changes to the traditional voiced aspirates. Moreover, they consider the feature of aspiration to phonemically irrelevant, with the choice between the aspirated and nonaspirated variants being mechanically determined by the paradigmatic alternations of root morphemes.

My own view is that it is necessary to recognize several distinct stages of development within Proto-Indo-European and that the traditional voiced aspirates were a relatively late development — in fact, it is probably only necessary to reconstruct them in the Disintegrating Indo-European ancestors of Indo-Iranian, Armenian, Greek, and Italic. The voiceless aspirates, on the other hand, seem to be fairly ancient and were most likely inherited by Proto-Indo-European from Proto-Nostratic.

For the latest period of development (“Disintegrating Indo-European”), I would reconstruct the Proto-Indo-European phonological system as follows (this is the reconstruction used throughout this book):



Glides:

w                      y

Nasals and Liquids:

m	n	nʸ	ŋ
	l	lʸ	
	r	rʸ	

Vowels:

i ~ e	u ~ o
ə ~ a	

Also the sequences:	iy ~ ey	uy ~ oy	əy ~ ay
	iw ~ ew	uw ~ ow	əw ~ aw

In Pre-Indo-European, the lateralized affricates developed into velar stops, while the palatalized alveolars, velars, and liquids, along with the palatalized nasal, were eliminated through depalatalization and merger with their non-palatalized counterparts. The development of lateralized affricates into palatal, velar, or uvular stops (or affricates) is a common development in the Northeast Caucasian languages, thus:

tʃ[h]	>	kʃ[h]	>	kx[h]	>	k[b]
voiceless alveolar lateralized affricate		voiceless velar lateralized affricate		voiceless velar affricate		voiceless velar stop
tʃ'	>	kʃ'	>	kx'	>	k'
glottalized alveolar lateralized affricate		glottalized velar lateralized affricate		glottalized velar affricate		glottalized velar stop

A similar shift may be posited for pre-Proto-Indo-European.

In the Phonemic Stress Stage of Proto-Indo-European, there was a major restructuring of the inherited vowel system. This was caused by the development of a strong stress accent. The basic rule was that morphologically significant syllables were stressed, while morphologically

nonsignificant syllables were unstressed. Nonstressed vowels tended to be either weakened or lost. It was during this stage of development that the syllabic liquids and nasals came into being. Lengthened-grade vowels may also have first appeared during this stage of development. Furthermore, I assume that it was during the Phonemic Stress Stage of Proto-Indo-European that the dental affricates were eliminated through deaffricatization and merger with the plain dentals.

The phonological system of the Phonemic Stress Stage of Proto-Indo-European may be reconstructed as follows:

Obstruents:	p <sup>[h]</sup>	t <sup>[h]</sup>	c <sup>[h]</sup>	k <sup>[h]</sup>	k <sup>w</sup> <sup>[h]</sup>	(q <sup>[h]</sup> )	
	b	d	ɟ	g	g <sup>w</sup>	(g)	
	p'	t'	c'	k'	k' <sup>w</sup>	(q')	(q' <sup>w</sup> ) ?
			s			h	ħ
							ʃ

Glides:	w(/u)	y(/i)
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Nasals and Liquids:	m/ṃ	n/ṇ	l/ḷ	r/ṛ
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Vowels:	i ~ e		u ~ o
		ə	
		e ~ a	
	ī ~ ē		ū ~ ō
		ē ~ ā	

Also the sequences:	iy ~ ey	uy ~ oy	ey ~ ay	əy
	iw ~ ew	uw ~ ow	ew ~ aw	əw
	īy ~ ēy	ūy ~ ōy	ēy ~ āy	
	īw ~ ēw	ūw ~ ōw	ēw ~ āw	

Note: \*ə > \*e under stress.

In the Phonemic Pitch Stage of Proto-Indo-European, pitch accent replaced stress accent, and the accent lost its ability to weaken or eliminate the vowels of unaccented syllables, that is to say, Proto-Indo-European changed from a “stress-accent” language to a “pitch-accent” language. Here, the basic rule was that morphologically significant syllables were marked by high pitch, while morphologically nonsignificant syllables were marked by low pitch. During this stage of

development, the pharyngeal fricatives *\*ħ* and *\*ʕ* developed into the multiply-articulated pharyngeal/laryngeal fricatives *\*ħh* and *\*ʕh* respectively. High vowels had nonphonemic low variants when contiguous with so-called “a-coloring” laryngeals (*\*h*, *\*ħh* and *\*ʕh*). Finally, it may be assumed that it was during this stage that the postvelars merged with the plain velars. It was probably at the end of the Phonemic Pitch Stage of Proto-Indo-European that the Anatolian languages became separated from the main speech community.

The phonological system of the Phonemic Pitch Stage of Proto-Indo-European may be reconstructed as follows:

Obstruents:	p <sup>[h]</sup>	t <sup>[h]</sup>	k <sup>[h]</sup>	k <sup>w</sup> [ <sup>h</sup> ]
	b	d	g	g <sup>w</sup>
	(pʼ)	tʼ	kʼ	kʼ <sup>w</sup>
		s		
Laryngeals:	ʔ	h	ħh	
			ʕh	
Nasals and Liquids:	m/ṃ	n/ṇ	l/ḷ	r/ṛ
Glides:	w(/u)	y(/i)		
Vowels:	e	(o)	a	i
	ē	(ō)	ā	ī

In Disintegrating Indo-European, the voiced stops became voiced aspirates and the laryngeals were mostly lost. First, the laryngeals *\*ʔ* and *\*h* were lost initially before vowels. In all other environments, *\*ʔ* and *\*h* merged into *\*h*. Then the laryngeals *\*ħh* and *\*ʕh* became *\*h*. Later, the single remaining laryngeal *\*h* was lost initially before vowels (except in pre-Proto-Armenian) and medially between an immediately preceding vowel and a following nonsyllabic. This latter change caused compensatory lengthening of preceding short vowels. Also during this stage of development — or perhaps even earlier — the velars developed palatalized allophones before front vowels and *\*y*. The palatovelars became phonemic in the so-called “satem” languages but remained subphonemic in the so-called “centum” languages. Pulju (1995:43) summarizes the developments in the Indo-European daughter languages as follows:

A three-way distinction between palatovelars, plain velars, and labiovelars is unavoidable for PIE, though it grew out of a pre-PIE two-way distinction between plain velars and labiovelars. Moreover, the distinction between the rare plain velars and the other series in PIE carried a low functional load. Hence, the PIE system was usually reduced to post-PIE systems with only a two-way distinction, always preserving the functionally most important palatovelar vs. labiovelar difference. Plain velars merged structurally with either palatovelars or labiovelars in all languages

but Albanian; there is no solid basis for making these two types of merger diagnostic of a split of PIE into so-called centum and satem dialects.

For late Disintegrating Indo-European, the Proto-Indo-European phonological system may be reconstructed as follows (column 1 is voiceless [aspirated], column 2 is glottalized, and column 3 is voiced [aspirated]):

	1	2	3	
Obstruents:	p <sup>h</sup>	p'	b <sup>h</sup>	(bilabial)
	t <sup>h</sup>	t'	d <sup>h</sup>	(dental)
	k <sup>ʏ</sup> <sup>h</sup>	k' <sup>ʏ</sup>	g <sup>ʏ</sup> <sup>h</sup>	(palatovelar)
	k <sup>h</sup>	k'	g <sup>h</sup>	(velar)
	k <sup>w</sup> <sup>h</sup>	k' <sup>w</sup>	g <sup>w</sup> <sup>h</sup>	(labiovelar)
		s		
Laryngeals:		h/h <sub>2</sub>		
Resonants:	m/m̥	n/n̥	l/l̥	r/r̥    w/u    y/i
Vowels:	e ē	o ō	a ā	(i) ī    (u) ū    ə

Note: The palatovelars (\*k<sup>ʏ</sup><sup>h</sup>], \*g<sup>ʏ</sup><sup>h</sup>], \*k'<sup>ʏ</sup>) are traditionally written \**k̑*, \**ǵh*, \**ǵ* or \**k̑̑*, \**ǵ̑h*, \**ǵ̑* respectively.

### 3.6. An Outline of the Development of the Proto-Indo-European Stop System in the Indo-European Daughter Languages

#### 3.6.1. Anatolian

In Anatolian, the glottals were deglottalized, resulting in the following system, with the three-way contrast (1) voiceless aspirated ~ (2) plain (unaspirated) voiceless ~ (3) plain voiced:

	1	2	3
Labial:	p <sup>h</sup>	p	b
Dental:	t <sup>h</sup>	t	d
Velar:	k <sup>h</sup>	k	g
Labiovelar:	k <sup>wh</sup>	k <sup>w</sup>	g <sup>w</sup>

References: Bomhard 1992c; Gamkrelidze 1982; Kronasser 1956:35—96; Melchert 1984, 1992, and 1994 (Melchert tentatively assumes that column 2 was voiced).

### 3.6.2. Tocharian

In Tocharian, the distinction between voiceless, glottalized, and voiced stops was eliminated. However, Tocharian originally preserved the older contrast. While this contrast still existed, *\*t'* was lost before non-syllabic resonants (cf. Van Windekens 1976—1982/I:82—83), while *\*tʰ* and *\*d* remained. The elimination of the older contrast must, therefore, have taken place after the loss of *\*t'* before non-syllabic resonants.

1. No doubt, the first step involved the deaspiration of the voiceless aspirates.
2. This was followed by the deglottalization of *\*p'*, *\*t'*, *\*k'*, and *\*kʷ* and their merger with the voiceless stops *\*p*, *\*t*, *\*k*, and *\*kʷ* respectively. This is shown by the fact that *\*mp* remained *mp*, while *\*mb* became *m* (cf. Van Windekens 1976—1982/I:79), and by the fact that *\*t* and *\*t'* had the same treatment before front vowels, namely, palatalization to *c*, while *\*d* went its own way under the same conditions — palatalization to *\*dz > ts* (cf. Van Windekens 1976—1982/I:83—84).
3. Finally, the voiced stops were devoiced and merged with the plain voiceless stops.

I		II deaspiration		III deglottalization		IV devoicing
p <sup>h</sup> , p', b	>	p, p', b	>	p, b	>	p (w)
t <sup>h</sup> , t', d	>	t, t', d	>	t, d	>	t (c, ts)
k <sup>h</sup> , k', g	>	k, k', g	>	k, g	>	k (ç)
kʷ <sup>h</sup> , k'ʷ, gʷ	>	kʷ, k'ʷ, gʷ	>	kʷ, gʷ	>	k(w/u) (k, ç)

References: Adams 1988:36—42; Krause—Thomas 1960:61—68; Van Windekens 1976—1982/I:76—94.

### 3.6.3. Germanic

Germanic is particularly important since it is one of the most conservative of the daughter languages in its treatment of the Proto-Indo-European stop system.

In Germanic (as in Anatolian), the glottalics were first deglottalized, resulting in the following system, with the three-way contrast (1) voiceless aspirated ~ (2) plain (unaspirated) voiceless ~ (3) plain voiced:



	1	2	3
Labial:	p <sup>h</sup>	p	b
Dental:	t <sup>h</sup>	t	d
Velar:	k <sup>h</sup>	k	g
Labiovelar:	k <sup>wh</sup>	k <sup>w</sup>	g <sup>w</sup>

1. The voiceless aspirates (series 1) become voiceless fricatives: \*p<sup>h</sup>, \*t<sup>h</sup>, \*k<sup>h</sup>, \*k<sup>wh</sup> > \*f, \*θ, \*χ, \*χ<sup>w</sup>, except after \*s-.
2. Later, the resulting voiceless fricatives became the voiced fricatives \*β, \*ð, \*γ, and \*γ<sup>w</sup> respectively except (A) initially and (B) medially between vowels when the accent fell on the contiguous preceding syllable (Verner's Law). \*s was also changed to \*z under the same conditions.
3. \*b remained initially, in gemination, and after nasals; \*d initially, in gemination, and after nasals, \*l, \*z, and \*g; and \*g only in gemination and after nasals. In other positions, however, \*b, \*d, \*g were changed into the voiced fricatives \*β, \*ð, \*γ respectively. \*g<sup>w</sup> became \*γ initially and \*γ<sup>w</sup> medially (cf. Wright—Wright 1925:131).

The resulting Proto-Germanic consonant system may be reconstructed as follows:

	Stops		Fricatives	
Labial:	p	b	f	β
Dental:	t	d	θ	ð
Velar:	k	g	χ	γ
Labiovelar:	kw	(gw)	χ <sup>w</sup>	(γ <sup>w</sup> )

References: Bomhard 1984:84—85; Hirt 1931—1934/1:79—118; Streitberg 1963:97—153; Krahe—Meid 1966—1967/1:79—123; Meillet 1967:116—124 and 1970:15—29; Moulton 1972:141—173; Normier 1977; Prokosch 1938:36—90; Vennemann 1984; Wright—Wright 1925:111—134.

### 3.6.4. Celtic

The discussion will be confined to Old Irish; only the major developments will be discussed.

1. The dental and velar ejectives (\*t' and \*k') merge completely with the plain voiced stops (\*d and \*g) in Proto-Celtic. The developments may be assumed to have been ejective > plain

- voiceless stop (through deglottalization) > voiced stop (through voicing):  $*t' > *t > *d$  and  $*k' > *k > *g$ . There is no evidence in Celtic for an earlier labial ejective  $*p'$ .
- Next, the voiced labiovelar  $*g^w$  was delabialized and merged with  $*g$ .
  - Then, the glottalized labiovelar  $*k^w$  developed (A) into  $*b$  initially and medially after consonants and (B) into  $*g$  initially before  $*u$  and medially between vowels and before consonants.
  - Original  $*p^h$  was lost in all of the Celtic languages:  $*p^h > *h > *Ø$ . However,  $p$  has been reintroduced into Old Irish through loanwords.

The consonants developed positional allophones under various conditions:

- Palatal allophones developed in the vicinity of original  $*i$ ,  $*ī$ ,  $*e$ , and  $*ē$ .
- Velar allophones developed in the vicinity of original  $*u$  and  $*ū$ .
- Neutral allophones were found in the vicinity of original  $*a$ ,  $*ā$ ,  $*o$ , and  $*ō$ .

In Old Irish, the palatal and velar allophones were indicated as such in writing by surrounding vowels. Unpronounced vowels were often introduced to indicate the quality of the following consonant. /p, t, c, b, d, g/ became the fricatives /f, θ, χ, v, ð, ʃ/ (written *ph, th, ch, b, d, g*) respectively initially after words that end or that formerly ended in a vowel and medially between vowels. /m, n, l, r/ became /μ, ν, λ, ρ/ (written *m, n, l, r*) respectively, and /s/ became /h/ under the same conditions. /μ/ was probably a nasalized /v/, while /ν, λ, ρ/ were lax variants of /n, l, r/. Consonants were changed as follows initially when the preceding word ended or formerly ended in a nasal:

- /p, t, c/ became /b, d, g/ (written *p, t, c*)
- /b, d/ first became /mb, nd/ and then /mm, nn/
- /f/ became /v/ (written *b*)
- /n/ was written before vowels
- /s, r, l, m, n/ were doubled when they followed a proclitic vowel

Old Irish thus had the following system of consonants (the written form is given first followed by the allophones in slashes):

p	/p, b/	t	/t, d/	c	/k, g/
ph	/f/	th	/θ/	ch	/χ/
f	/f/	s	/s/		
b	/b, v/	d	/d, ð/	g	/g, ʃ/
m	/m, μ/	n	/n, ν/	[n]	/ŋ/
		l	/l, λ/	r	/r, ρ/
		h	/h/		

References: Old Irish: Lehmann—Lehmann 1975:8—10, 15—16, 22—23, 30, 38—39, 45—47; Lewis—Pedersen 1961:26—56; Thurneysen 1946:74—153. Welsh: Jones 1913:18—30 and 122—191.

### 3.6.5. Slavic

In Pre-Slavic, Pre-Baltic, Pre-Indo-Iranian, Pre-Armenian, and Pre-Albanian (the so-called “satəm” languages), the velars developed palatalized allophones when contiguous with front vowels, apophonic *\*o*, and *\*y*. In the early prehistory of these branches, the labiovelars were (perhaps only partially at first) delabialized. The newly delabialized (labio)velars merged with the unpalatalized allophones of the velars. This change brought about the phonemicization of the palatals since both palatalized velars (from earlier plain velars) and unpalatalized velars (from earlier labiovelars) were now found in the vicinity of front vowels, apophonic *\*o*, and *\*y*.

The phonological system of the Disintegrating Indo-European antecedent of Proto-Slavic may thus be reconstructed as follows:

	1	2	3
Labial:	p <sup>h</sup>	p'	b
Dental:	t <sup>h</sup>	t'	d
Palatal:	k <sup>y</sup> <sup>h</sup>	k' <sup>y</sup>	g <sup>y</sup>
Velar:	k <sup>h</sup>	k'	g

1. The ejectives merged completely with the plain voiced stops (*\*b*, *\*d*, *\*g<sup>y</sup>*, and *\*g*) in Proto-Slavic. The development may be assumed to have been ejective > plain voiceless stop (through deglottalization) > voiced stop (through voicing): *\*p'* > *\*p* > *\*b*, *\*t'* > *\*t* > *\*d*, *\*k'<sup>y</sup>* > *\*k<sup>y</sup>* > *\*g<sup>y</sup>*, and *\*k'* > *\*k* > *\*g*. The loss of glottalization caused lengthening of preceding contiguous short vowels (Winter's Law).
2. Then, the voiceless aspirates were deaspirated: *\*p<sup>h</sup>*, *\*t<sup>h</sup>*, *\*k<sup>y</sup><sup>h</sup>*, *\*k<sup>h</sup>* > *\*p*, *\*t*, *\*k<sup>y</sup>*, *\*k*. Note: there are a small number of examples in which *\*k<sup>h</sup>* appears to become *\*x* in Proto-Slavic. These are best explained as foreign borrowings (cf. Carlton 1991:95).
3. After *\*k*, *\*r*, *\*i*, *\*u*, *\*s* became *\*x* (> *\*š* before front vowels). A similar change is found in Indo-Iranian.
4. *\*k<sup>y</sup>* and *\*g<sup>y</sup>* became *\*s* and *\*z* respectively. No doubt, the developments were as follows: *\*k<sup>y</sup>* > *\*t<sup>y</sup>* > *\*ts* > *\*s* and *\*g<sup>y</sup>* > *\*d<sup>y</sup>* > *\*dz* > *\*z*.
5. *\*k* and *\*g* were palatalized to *\*č* and *\*ž* respectively before front vowels and *\*y*.
6. The syllabic resonants *\*m̥*, *\*n̥*, *\*l̥*, *\*r̥* developed into *\*i* (or *\*u*) plus *\*m*, *\*n*, *\*l*, *\*r*, thus: *\*m̥*, *\*n̥*, *\*l̥*, *\*r̥* > *\*im*, *\*in*, *\*il*, *\*ir*.

7. At a later date, *\*k* and *\*g* were palatalized to *\*c* and *\*dz* respectively before *\*ě* (< *\*oy*). *\*t*, *\*d*, *\*n*, *\*l*, *\*r* plus the semivowel *\*y* became *\*tʲ*, *\*dʲ*, *\*nʲ*, *\*lʲ*, *\*rʲ* respectively, while *\*s* became *\*š* under the same conditions.
8. *\*p*, *\*b*, *\*m*, *\*v* plus *\*y* became *\*pʲ*, *\*bʲ*, *\*mʲ*, *\*vʲ* respectively.

The Common Slavic phonological system may be reconstructed thus (cf. Bidwell 1963:12):

Stops:	p	t		k
	b	d		g
Fricatives:	(v)	s		š
		z		ž
Affricates:		c	tʲ	č
		dz	dʲ	
Nasals:	m	n	nʲ	
Liquids:	r	l	rʲ	lʲ
Semivowels:	(v)		y	

References: Bidwell 1963; Bomhard 1984:80—81; Carlton 1991; Entwistle—Morison 1964:71—101; Leskien 1969:10—64; Meillet 1965:20—45, 86—102, and 126—157; Schmalstieg 1976:31—55; Shevelov 1964; Vaillant 1950—1966/I:23—103.

### 3.6.6. Baltic

The Baltic developments were fairly similar to the early Slavic developments, except that *\*kʲ* and *\*gʲ* became *\*š* and *\*ž* respectively. As in Slavic, the ejectives merged completely with the plain voiced stops. Lithuanian shows the change of *\*s* to *\*š* after *\*k* and *\*r* but not after *\*i* and *\*u* as in Slavic and Indo-Iranian. The syllabic resonants *\*m̥*, *\*n̥*, *\*l̥*, *\*r̥* developed into *\*i* (or *\*u*) plus *\*m*, *\*n*, *\*l*, *\*r*, thus: *\*m̥*, *\*n̥*, *\*l̥*, *\*r̥* > *\*im*, *\*in*, *\*il*, *\*ir*. In Lithuanian, *t* plus *j* (= *y*) and *d* plus *j* (= *y*) became *či* and *dži* respectively; *t* plus *l* and *d* plus *l* became *kl* and *gl* respectively.

The Common Baltic phonological system may be reconstructed as follows (cf. Stang 1966:89):

p	b	m	
t	d	n	
k	g	[ŋ]	
kʲ (?)	gʲ (?)	[nʲ] (?)	
š	ž		
s	(z)		
r	l	y	w

Note: Stang writes *j* and *u* for *y* and *w* respectively.

References: Bomhard 1984:81; Endzelins 1971:48—76; Senn 1957—1966:83—90; Stang 1966:88—120. Baltic developments are also discussed in Meillet 1965, Shevelov 1964, and Vaillant 1950—1966. Information on Old Prussian phonology is given in Schmalstieg 1974:8—28.

### 3.6.7. Armenian

Armenian is particularly important because it provides the key to understanding the developments in Pre-Indo-Iranian, Pre-Greek, and Pre-Italic. In the early prehistory of Pre-Armenian, Pre-Indo-Iranian, Pre-Greek, and Pre-Italic, the glottalics first became plain voiceless stops (through deglottalization), and the voiced stops then became voiced aspirates. Next, at a later date, in Pre-Indo-Iranian, Pre-Greek, and Pre-Italic, but not in Pre-Armenian, the plain voiceless stops became voiced stops. Armenian, however, preserves the first stage of this shift — that is to say, the plain voiceless stops remained as such and were not changed to voiced stops. Thus, the Classical Armenian phonological system directly attests the three-way contrast (1) voiceless aspirated ~ (2) plain (unaspirated) voiceless ~ (3) voiced aspirated in its occlusive system.

1. In Pre-Armenian (as in Pre-Slavic, Pre-Baltic, Pre-Albanian, and Pre-Indo-Iranian), the velars developed palatalized allophones when contiguous with front vowels, apophonic *\*o*, and *\*y*. Next, the labiovelars were (perhaps only partially at first) delabialized. The newly delabialized (labio)velars then merged with the unpalatalized allophones of the velars. This change brought about the phonemicization of the palatals since both palatalized velars (from earlier plain velars) and unpalatalized velars (from earlier labiovelars) were now found in the vicinity of front vowels, apophonic *\*o*, and *\*y*.
2. Next, the glottalics were deglottalized: *\*p'*, *\*t'*, *\*k'y*, *\*k' > \*p*, *\*t*, *\*k'y*, *\*k*. Note: there are no examples of *\*p'* in Armenian.
3. Then, the plain voiced stops became voiced aspirates: *\*b*, *\*d*, *\*g'y*, *\*g > \*b<sup>h</sup>*, *\*d<sup>h</sup>*, *\*g<sup>y<sup>h</sup></sup>*, *\*g<sup>h</sup>*. This was a context-free development. On the interpretation of the sounds traditionally transcribed as /b/, /d/, /g/, /j/, /j/, /z/, and /ž/ as voiced aspirates, cf. Godel 1975:9—10.
4. The Pre-Armenian voiced aspirates remained except that, medially between vowels, *\*b<sup>h</sup> > w*, *\*g<sup>y<sup>h</sup></sup> > \*j<sup>h</sup> /dž<sup>h</sup> > z*, and *\*g<sup>h</sup> > ž*, while *\*g<sup>h</sup>* remained initially before back vowels but was changed to *j /dž<sup>h</sup> /* before front vowels.
5. The syllabic resonants *\*m*, *\*n*, *\*l*, *\*r* developed into *\*a* plus *\*m*, *\*n*, *\*l*, *\*r*, thus: *\*m*, *\*n*, *\*l*, *\*r > am, an, al, ar* (*ar* before *n*).
6. *l* became *t* before consonants.
7. *\*w* became *g* or *v*.
8. *\*s* became *h* or *Ø* initially before vowels.

9. As in Indo-Iranian, Slavic, and Lithuanian, \*s became š after r.

10. \*sk and \*ks became ç.

The Armenian developments may be summarized as follows:

I palatalization of velars and delabialization of labiovelars	II deglossalization of ejectives	III development of voiced aspirates	IV Classical Armenian (traditional transcription)
p <sup>h</sup> , (p'), b	>	p <sup>h</sup> , p, b <sup>h</sup>	h (w, Ø), b (w)
t <sup>h</sup> , t', d	>	t <sup>h</sup> , t, d <sup>h</sup>	t <sup>h</sup> , t, d
k <sup>y</sup> , k'y, g <sup>y</sup>	>	k <sup>y</sup> , k <sup>y</sup> , g <sup>y</sup>	s, c, j (z)
k <sup>h</sup> , k', g	>	k <sup>h</sup> , k, g <sup>h</sup>	k <sup>h</sup> , k, g (ǰ, ž)

At a later date, earlier clusters of voiceless stop plus laryngeal developed as follows:

pH	>	p <sup>h</sup>
tH	>	t <sup>h</sup>
kH	>	x

In Armenian, some of the reflexes of the original voiceless aspirates merged with the reflexes of the new voiceless aspirates. This happened in the case of certain onomatopoeic terms, where, for example, original \*p<sup>h</sup> and \*k<sup>h</sup> appear as p<sup>h</sup> and x respectively as if they were from earlier \*pH and \*kH. In like manner, the aspiration of the original voiceless aspirates was preserved in Armenian after initial \*s- (a similar development took place in Indo-Iranian). Finally, \*t<sup>h</sup> and \*tH have mostly merged in Armenian, though earlier \*rt<sup>h</sup> has become rd, while \*rtH has become rt<sup>h</sup> (cf. Meillet 1967:104).

Armenian is the only non-Anatolian daughter language that has preserved a trace of a consonantal laryngeal. Kurylowicz's \*ǵ<sub>2</sub> (Sturtevant's \*x) appears as h initially before full-grade vowels in a small number of words (for examples, cf. Bomhard 1984:82—83). The Armenian material is not without problems, however, since initial h is unstable. This means that the same word sometimes has two alternates, one with h- and one without. Furthermore, h- is sometimes missing where the Hittite cognate unequivocally points to original \*ǵ<sub>2</sub> such as in Armenian *arcat<sup>h</sup>* "silver" beside Hittite *ḫarkiš* "white" (other cognates include Greek ἀργός "bright, white" and Latin *argentum* "silver"). Consequently, the Armenian material, though extremely valuable, must be used with caution.

References: Bomhard 1984:81—84 and 1986:71—72; Godel 1975:9—10 and 61—91; Meillet 1936:23—40.

### 3.6.8. Indo-Iranian

The changes leading from Proto-Indo-European to Proto-Indo-Iranian are particularly complicated. The first three steps are identical to what is assumed to have happened in Pre-Armenian (and also Pre-Greek and Pre-Italic).

1. In Pre-Indo-Iranian (as in Pre-Slavic, Pre-Baltic, Pre-Albanian, and Pre-Armenian), the velars developed palatalized allophones when contiguous with front vowels, apophonic *\*o*, and *\*y*. Next, the labiovelars were (perhaps only partially at first) delabialized. The newly delabialized (labio)velars then merged with the unpalatalized allophones of the velars. This change brought about the phonemicization of the palatals since both palatalized velars (from earlier plain velars) and unpalatalized velars (from earlier labiovelars) were now found in the vicinity of front vowels, apophonic *\*o*, and *\*y*.
2. Next, the glottalics were deglottalized: *\*p'*, *\*t'*, *\*k'y*, *\*k'* > *\*p*, *\*t*, *\*k<sub>y</sub>*, *\*k*.
3. Then, the plain voiced stops became voiced aspirates: *\*b*, *\*d*, *\*g<sub>y</sub>*, *\*g* > *\*b<sup>h</sup>*, *\*d<sup>h</sup>*, *\*g<sup>yh</sup>*, *\*g<sup>h</sup>*. This was a context-free development. This was the stage reached by Armenian.
4. When two voiced aspirates cooccurred in a root, the first was deaspirated (Grassmann's Law).
5. In Pre-Indo-Iranian (and in Pre-Greek and Pre-Italic), but unlike Pre-Armenian, the plain (unaspirated) voiceless stops (from earlier glottalics) developed into plain (unaspirated) voiced stops: *\*p*, *\*t*, *\*k<sub>y</sub>*, *\*k* > *\*b*, *\*d*, *\*g<sub>y</sub>*, *\*g*. This was a context-free development.
6. The imbalance caused by the voicing of the plain voiceless stops caused the voiceless aspirates to be partially deaspirated. The deaspiration took place everywhere except (A) after initial *\*s*- and (B) in onomatopoeia (cf. Bomhard 1986:73). However, aspiration was lost in the clusters *\*sp<sup>h</sup>-*, *\*st<sup>h</sup>-*, *\*sk<sup>h</sup>-* when an earlier laryngeal followed in the stem or when another aspirated stop followed in the stem: *\*(s)t<sup>h</sup>eHy-* > *\*(s)teHy-* > *\*(s)tāy-* (cf. Sanskrit *stāyati* "he, she steals", *stāyú-ḥ*, *tāyú-ḥ* "thief, robber"); *\*(s)t<sup>h</sup>eHi-* > *\*(s)teHi-* > *\*(s)tai-* (cf. Sanskrit *stená-ḥ* "thief", *stéya-ḥ* "theft, robbery"). *\*(s)t<sup>h</sup>enH-* > *\*(s)tenH-* > *\*(s)ten-* (cf. Sanskrit *stanati* "resounds, reverberates"). Note: apparent exceptions to these rules appear to be due to the generalization of variant forms of the stems in question, or, in some cases, the exceptions are due to borrowing.
7. Additional voiceless aspirates arose from earlier clusters of voiceless stop plus laryngeal: *\*pH*, *\*tH*, *\*kH* > *\*p<sup>h</sup>*, *\*t<sup>h</sup>*, *\*k<sup>h</sup>* respectively.
8. *\*s* was changed into *\*š* after *\*k*, *\*r*, *\*i*, *\*u*. A similar change is also found in Slavic.
9. The palatals *\*k<sub>y</sub>*, *\*g<sub>y</sub>*, *\*g<sup>yh</sup>* were affricated to *\*tš*, *\*dž*, *\*dž<sup>h</sup>* respectively (cf. Burrow 1974:74).
10. Following that, the velars *\*k*, *\*g*, *\*g<sup>h</sup>* were palatalized to *\*k<sub>y</sub>*, *\*g<sub>y</sub>*, *\*g<sup>yh</sup>* respectively before *\*ě*, *\*ĩ*, and *\*y* (cf. Mayrhofer 1972:24). Note: *\*k<sup>h</sup>* was not palatalized.

The developments outlined above may be summarized as follows:

	I palatalization of velars and delabialization of labiovelars		II deglottalization of ejectives		III development of voiced aspirates	
Labial:	p <sup>h</sup> , p', b	>	p <sup>h</sup> , p, b	>	p <sup>h</sup> , p, b <sup>h</sup>	>
Dental:	t <sup>h</sup> , t', d	>	t <sup>h</sup> , t, d	>	t <sup>h</sup> , t, d <sup>h</sup>	>
Palatal:	k <sup>yh</sup> , k'y, g <sup>y</sup>	>	k <sup>yh</sup> , k <sup>y</sup> , g <sup>y</sup>	>	k <sup>yh</sup> , k <sup>y</sup> , g <sup>yh</sup>	>
Velar:	k <sup>h</sup> , k', g	>	k <sup>h</sup> , k, g	>	k <sup>h</sup> , k, g <sup>h</sup>	>
IV voicing of plain (unaspirated) voiced stops			V partial deaspiration of voiceless aspirates		VI palatals become affricates	VII partial palatalization of velars
p <sup>h</sup> , b, b <sup>h</sup>	>	p, p <sup>h</sup> , b, b <sup>h</sup>	>	p, p <sup>h</sup> , b, b <sup>h</sup>	>	p, p <sup>h</sup> , b, b <sup>h</sup>
t <sup>h</sup> , d, d <sup>h</sup>	>	t, t <sup>h</sup> , d, d <sup>h</sup>	>	t, t <sup>h</sup> , d, d <sup>h</sup>	>	t, t <sup>h</sup> , d, d <sup>h</sup>
k <sup>yh</sup> , g <sup>y</sup> , g <sup>yh</sup>	>	k <sup>y</sup> , k <sup>yh</sup> , g <sup>y</sup> , g <sup>yh</sup>	>	ts, -, dz, dz <sup>h</sup>	>	ts, -, dz, dz <sup>h</sup>
k <sup>h</sup> , g, g <sup>h</sup>	>	k, k <sup>h</sup> , g, g <sup>h</sup>	>	k, k <sup>h</sup> , g, g <sup>h</sup>	>	k <sup>y</sup> , -, g <sup>y</sup> , g <sup>yh</sup> (before *ē, *ī, and *y) k, k <sup>h</sup> , g, g <sup>h</sup> (elsewhere)

In Avestan and Old Persian, the plain and aspirated voiced stops merged. The voiceless aspirates became fricatives except after a sibilant, where they were deaspirated. The plain voiceless stops developed into fricatives when immediately followed by a consonant unless a sibilant preceded.

In Old Indic (Vedic and Classical Sanskrit), \*dz and \*g<sup>y</sup> merged into *j*, and \*dz<sup>h</sup> and \*g<sup>yh</sup> merged into *h*.

The Old Indic phonological system was as follows (cf. Mayrhofer 1972:17; Gonda 1968:9—10):

Velar:	k	kh	g	gh	ṅ
Palatal:	c	ch	j	jh	ñ
Retroflex:	ṭ	ṭh	ḍ	ḍh	ṇ
Dental:	t	th	d	dh	n
Labial:	p	ph	b	bh	m



Semivowels:	y r l v
Sibilants:	ś š s
Aspirate:	h
Visarga:	ḥ
Anusvāra:	m̐

Once the above system was established, it remained remarkably stable for well over three thousand years — the phonological systems of the modern Indo-Aryan languages remain to this day similar in structure to the phonological system of Old Indic (cf. Bloch 1965:96—97; see Ghatage 1962 for examples). This fact raises an interesting question about the phonological system reconstructed for the Indo-European parent language by the Neogrammarians: The Neogrammarian reconstruction is extremely close to the phonological system of Old Indic. If the Neogrammarian system were in fact an accurate representation of what had existed in Proto-Indo-European, one may legitimately ask why it, too, did not remain stable in the Indo-European daughter languages. It thus seems to be a fair conclusion that the Proto-Indo-European phonological system was not in fact similar to that of Old Indic and that the Old Indic system was an innovation.

References: Bomhard 1986:77—80; Burrow 1973:67—102; Edgerton 1946; Gonda 1968:9—19; Johnson 1917:67—89; Kent 1953:29—42; Mayrhofer 1972:20—29; Thumb 1958—1959.I/1:276—315.

### 3.6.9. Greek

Many of the early Pre-Greek developments were similar to what is assumed to have happened in Pre-Armenian and Pre-Indo-Iranian. However, Greek is a so-called “centum” language, which means that it initially preserved the original contrast between velars and labiovelars. Unlike Pre-Armenian and Pre-Indo-Iranian, but similar to Italic, Greek changed the voiced aspirates into voiceless aspirates.

1. First, the glottalics were deglottalized:  $*p', *t', *k', *k^w > *p, *t, *k, *k^w$ .
2. Then, the plain voiced stops became voiced aspirates:  $*b, *d, *g, *g^w > *b^h, *d^h, *g^h, *g^{wh}$ . This was a context-free development.
3. As in Indo-Iranian, when two voiced aspirates cooccurred in a root, the first was deaspirated (Grassmann's Law).
4. In Pre-Greek (and in Pre-Indo-Iranian and Pre-Italic), but unlike Pre-Armenian, the plain (unaspirated) voiceless stops (from earlier glottalics) developed into plain (unaspirated) voiced stops:  $*p, *t, *k, *k^w > *b, *d, *g, *g^w$ . This was a context-free development.
5. The imbalance caused by the voicing of the plain voiceless stops caused the voiceless aspirates to be partially deaspirated. Note: Emonds (1970:120) also assumes that some of the examples of voiceless aspirates found in Indo-Iranian, Greek, and Armenian are derived from the original voiceless aspirates, that is to say, they failed to undergo the expected

deaspiration. Edmonds accounts for this by “reintroduction from a dialect that did not undergo Z2 [deaspiration]”. In other words, he sees them as borrowings. While this may be true in some cases, I prefer to see them mostly as the natural result of developments within these branches themselves.

6. Additional voiceless aspirates arose from earlier clusters of voiceless stop plus laryngeal:  $*pH, *tH, *kH > *p^h, *t^h, *k^h$  respectively.
7. At a later date, the voiced aspirates were devoiced — the unaspirated allophones became plain (unaspirated) voiceless stops, and the aspirated allophones became voiceless aspirates:  $*b \sim *b^h, *d \sim *d^h, *g \sim *g^h, *g^w \sim *g^{wh} > *p \sim *p^h, *t \sim *t^h, *k \sim *k^h, *k^w \sim *k^{wh}$ . The newly-formed plain and aspirated voiceless stops merged completely with the previously-existing plain and aspirated voiceless stops. As a typological parallel, it may be noted that similar devoicing of earlier voiced aspirates took place in Romany (cf. Meillet 1967:100).

The Greek developments may be summarized as follows:

	I deglottalization of ejectives		II development of voiced aspirates		III voicing of plain (unaspirated) voiced stops	
Labial:	$p^h, p, b$	>	$p^h, p, b^h$	>	$p^h, b, b^h$	>
Dental:	$t^h, t, d$	>	$t^h, t, d^h$	>	$t^h, d, d^h$	>
Velar:	$k^h, k, g$	>	$k^h, k, g^h$	>	$k^h, g, g^h$	>
Labiovelar:	$k^{wh}, k^w, g^w$	>	$k^{wh}, k^w, g^{wh}$	>	$k^{wh}, g^w, g^{wh}$	>
	IV partial deaspiration of voiceless aspirates		V devoicing of voiced aspirates			
	$p, p^h, b, b^h$	>	$p, p^h, b$			
	$t, t^h, d, d^h$	>	$t, t^h, d$			
	$k, k^h, g, g^h$	>	$k, k^h, g$			
	$k^w, k^{wh}, g^w, g^{wh}$	>	$k^w, k^{wh}, g^w$			

The labiovelars were eliminated in Greek in historic times. The process of elimination probably occurred in several stages. Since the labiovelars mostly remain in Mycenaean, their elimination can reasonably be placed between the Mycenaean period and the beginning of the alphabetic period, that is, between about 1400—900 BCE (cf. Lejeune 1972:43—53). The developments were as follows:

1. Before or after  $u$ ,  $k^w$ ,  $k^{wh}$ , and  $g^w$  were delabialized, and the resulting phonemes merged with  $k$ ,  $k^h$ , and  $g$  (written  $\kappa$ ,  $\chi$ , and  $\gamma$ ) respectively.
2. Next,  $k^w$ ,  $k^{wh}$ , and  $g^w$  were palatalized before  $\check{e}$  and  $\check{i}$ . The resulting sounds then merged with  $t$ ,  $t^h$ , and  $d$  (written  $\tau$ ,  $\theta$ , and  $\delta$ ) respectively in the majority of Greek dialects.
3. Finally, all remaining labiovelars became labials:  $k^w$ ,  $k^{wh}$ , and  $g^w > p$ ,  $p^h$ , and  $b$  (written  $\pi$ ,  $\phi$ , and  $\beta$ ).

$*m$ ,  $*n$ ,  $*l$ ,  $*r$  generally remained in Greek except that final  $*m$  became  $-n$  (written  $\nu$ ) as in Anatolian, Germanic, Celtic, and probably Baltic and Slavic.  $*m$ ,  $*p$ ,  $*l$ ,  $*r$  developed into  $\alpha\mu$ ,  $\alpha\nu$ ,  $\alpha\lambda$ ,  $\alpha\rho$  respectively before vowels. Before consonants,  $*m$  and  $*p$  merged into  $\alpha$ , while  $*l$  and  $*r$  became  $\alpha\lambda/\lambda\alpha$  and  $\alpha\rho/\rho\alpha$  respectively.

$*s$ ,  $*y$ , and  $*w$  were lost medially between vowels. Initially before vowels,  $*s$  became  $h$  (written  $\eta$ ),  $*y$  became either  $h$  or  $z$  (written  $\eta$  and  $\zeta$  respectively), while  $*w$  was lost in Attic-Ionic.  $*s$  remained when final and when before or after voiceless stops.

References: Bomhard 1984:89—91; Buck 1933:78—161 and 1955:17—84; Grammont 1948; Lejeune 1972; Meillet—Vendryes 1968:40—68; Palmer 1980:223—241; Schwyzler 1953:169—371.

### 3.6.10. Italic

Many of the early Pre-Italic developments were similar to what is assumed to have happened in Pre-Greek. Like Greek, Italic belonged to the so-called “centum” languages, which means that it initially preserved the original contrast between velars and labiovelars.

1. First, the glottalics were deglottalized:  $*p', *t', *k', *k^w > *p, *t, *k, *k^w$ .
2. Then, the plain voiced stops became voiced aspirates:  $*b, *d, *g, *g^w > *b^h, *d^h, *g^h, *g^{wh}$ . This was a context-free development. Note: Grassmann’s Law did not operate in Italic.
3. In Pre-Italic (and in Pre-Indo-Iranian and Pre-Greek), but unlike Pre-Armenian, the plain (unaspirated) voiceless stops (from earlier glottalics) developed into plain (unaspirated) voiced stops:  $*p, *t, *k, *k^w > *b, *d, *g, *g^w$ . This was a context-free development.
4. The imbalance caused by the voicing of the plain voiceless stops caused the voiceless aspirates to be partially deaspirated.
5. Additional voiceless aspirates arose from earlier clusters of voiceless stop plus laryngeal:  $*pH, *tH, *kH > *p^h, *t^h, *k^h$  respectively.
6. At a later date, the voiced aspirates were devoiced:  $*b^h, *d^h, *g^h, *g^{wh} > *p^h, *t^h, *k^h, *k^{wh}$ . The newly-formed plain and aspirated voiceless stops merged completely with the previously-existing aspirated voiceless stops.
7. Finally, the voiceless aspirates (from earlier voiced aspirates as well as from clusters of voiceless stop plus laryngeal) became voiceless fricatives.

The Italic developments may be summarized as follows:

	I degloTTalization of ejectives		II development of voiced aspirates		III voicing of plain (unaspirated) voiced stops	
Labial:	p <sup>h</sup> , p, b	>	p <sup>h</sup> , p, b <sup>h</sup>	>	p <sup>h</sup> , b, b <sup>h</sup>	>
Dental:	t <sup>h</sup> , t, d	>	t <sup>h</sup> , t, d <sup>h</sup>	>	t <sup>h</sup> , d, d <sup>h</sup>	>
Velar:	k <sup>h</sup> , k, g	>	k <sup>h</sup> , k, g <sup>h</sup>	>	k <sup>h</sup> , g, g <sup>h</sup>	>
Labiovelar:	k <sup>wh</sup> , k <sup>w</sup> , g <sup>w</sup>	>	k <sup>wh</sup> , k <sup>w</sup> , g <sup>wh</sup>	>	k <sup>wh</sup> , g <sup>w</sup> , g <sup>wh</sup>	>
	IV partial deaspiration of voiceless aspirates		V devoicing of voiced aspirates		VI voiceless aspirates become voiceless fricatives	
	p, p <sup>h</sup> , b, b <sup>h</sup>	>	p, p <sup>h</sup> , b	>	p, f, b	
	t, t <sup>h</sup> , d, d <sup>h</sup>	>	t, t <sup>h</sup> , d	>	t, θ, d	
	k, k <sup>h</sup> , g, g <sup>h</sup>	>	k, k <sup>h</sup> , g	>	k, χ, g	
	k <sup>w</sup> , k <sup>wh</sup> , g <sup>w</sup> , g <sup>wh</sup>	>	k <sup>w</sup> , k <sup>wh</sup> , g <sup>w</sup>	>	k <sup>w</sup> , χ <sup>w</sup> , g <sup>w</sup>	

In Oscan and Umbrian, \**f*, \**θ*, and \**χ<sup>w</sup>* merged into *f*, while \**χ* became *h*. In Latin, the merger of \**f*, \**θ*, and \**χ<sup>w</sup>* into *f* only took place initially. \**f* became *b* medially; \**θ* became (A) *d* medially but (B) *b* before or after *r*, before *l*, or after *u*; and \**χ<sup>w</sup>* became (A) *v* between vowels, (B) *gu* after *n*, but (C) *g* before consonants or *u*. \**χ* became (A) *h* initially in Latin but (B) *g* when before or after consonants and (C) *f* when before *u*.

\**m*, \**n*, \**l*, \**r* were preserved. \**y* remained initially in Latin (written *i*) but was lost between vowels, while \**w* (written *v*) was unchanged. \**m̥*, \**n̥*, \**l̥*, \**r̥* developed into *a* plus *m*, *n*, *l*, *r* respectively before vowels. Elsewhere, \**l̥* and \**r̥* became *ol* and *or* respectively, and \**m̥* and \**n̥* became *em* and *en* respectively.

\**s* generally remained, though it was voiced to *z* between vowels. The *z* was retained in Oscan but was changed to *r* in Umbrian and Latin.

References: Bomhard 1984:88—89; Buck 1933:78—161; Leumann 1963:55—180; Lindsay 1894:219—315; Meillet—Vendryes 1968:69—93; Palmer 1954:211—232.

## 3.6.11. Albanian

Though the Albanian developments are still not completely understood, some tentative conclusions are possible.

1. In Pre-Albanian (as in Pre-Slavic, Pre-Baltic, Pre-Indo-Iranian, and Pre-Armenian), the velars developed palatalized allophones when contiguous with front vowels, apophonic *\*o*, and *\*y*. In the early prehistory of these branches, the labiovelars were (perhaps only partially at first) delabialized. The newly delabialized (labio)velars merged with the unpalatalized allophones of the velars. This change brought about the phonemicization of the palatals since both palatalized velars (from earlier plain velars) and unpalatalized velars (from earlier labiovelars) were now found in the vicinity of front vowels, apophonic *\*o*, and *\*y*. Note: Albanian provides the strongest evidence for the existence of three distinct guttural series in its Disintegrating Indo-European ancestor: the labiovelars are distinguished from the plain velars by the fact that the former are palatalized to sibilants before front vowels, while the latter are not (cf. Mann 1977:24—25 and 34—35).
2. The ejectives are deglottalized: *\*p'*, *\*t'*, *\*k'y*, *\*k'*, *\*k'w* > *\*p*, *\*t*, *\*kʲ*, *\*k*, *\*kʷ*.
3. Then, the palatals became palatalized alveolars: *\*kʲh*, *\*kʲ*, *\*gʲ* > *\*tʲh*, *\*tʲ*, *\*dʲ*. These later developed into voiceless and voiced interdental fricatives.
4. Next, the plain voiceless stops (from earlier ejectives) became plain voiced stops: *\*p*, *\*t*, *\*kʲ*, *\*k*, *\*kʷ* > *\*b*, *\*d*, *\*gʲ*, *\*g*, *\*gʷ*. In general, the developments of the plain voiced stops and the former ejectives are identical, though initial *\*gʲ* (> *\*dʲ*) appears as *d*, while initial *\*kʲ* appears as *dh* (cf. Mann 1977:33). This seems to indicate that the labial and dental stops may have developed ahead of and slightly differently from the palatal, velar, and labiovelar members.
5. Finally, the voiceless aspirates are deaspirated: *\*pʰ*, *\*tʰ*, *\*tʲh*, *\*kʰ* > *\*p*, *\*t*, *\*tʲ*, *\*k*.

The Albanian developments may be summarized as follows:

	I palatalization of velars and delabialization of labiovelars		II deglottalization of ejectives		III palatals become palatalized alveolars	
Labial:	p <sup>h</sup> , (p'), b	>	p <sup>h</sup> , p, b	>	p <sup>h</sup> , p, b	>
Dental:	t <sup>h</sup> , t', d	>	t <sup>h</sup> , t, d	>	t <sup>h</sup> , t, d	>
Palatal:	k <sup>ʲh</sup> , k'y, g <sup>ʲ</sup>	>	k <sup>ʲh</sup> , kʲ, g <sup>ʲ</sup>	>	tʲ <sup>h</sup> , tʲ, dʲ	>
Velar:	k <sup>h</sup> , k', g	>	k <sup>h</sup> , k, g	>	k <sup>h</sup> , k, g	>
Labiovelar:	k <sup>wh</sup> , k'w, g <sup>w</sup>	>	k <sup>wh</sup> , k <sup>w</sup> , g <sup>w</sup>	>	k <sup>wh</sup> , k <sup>w</sup> , g <sup>w</sup>	>

IV voicing of voiceless stops		V deaspiration of voiceless aspirates		VI Albanian
p <sup>h</sup> , b	>	p, b	>	p, b
t <sup>h</sup> , d	>	t, d	>	t, d
tʰ, dʷ <sub>1</sub> , dʷ <sub>2</sub>	>	tʷ, dʷ <sub>1</sub> , dʷ <sub>2</sub>	>	th, d (dh), dh
k <sup>h</sup> , g	>	k, g	>	k (q), g (gj)
kʰ, gʷ	>	kʷ, gʷ	>	k (q, s), g (gj, z)

References: Bomhard 1984:92; Huld 1984:138—157; Mann 1977:24—25 and 32—36.

## A Sketch of the Phonological Systems of the Remaining Nostratic Daughter Languages

### 4.1. Kartvelian (South Caucasian)

Proto-Kartvelian had a rich system of stops, affricates, and fricatives. Each stop and affricate series was characterized by the three-way contrast (1) voiceless (aspirated), (2) voiced, and (3) glottalized. Thomas V. Gamkrelidze and Givi Mačavariani (1982) reconstruct three separate series of affricates and fricatives, namely, a front series, a mid series, and a back series, but Karl Horst Schmidt (1962) reconstructs only two. It is the views of Gamkrelidze and Mačavariani that are followed in this book. Klimov (1964) also follows Gamkrelidze and Mačavariani.

Proto-Kartvelian also had a series of resonants, which could function as syllabics as well as nonsyllabics, depending upon their environment. The patterning is strikingly similar to what is assumed to have existed in Proto-Indo-European.

Three short vowels and three long vowels are usually reconstructed for Proto-Kartvelian. As in Proto-Indo-European, the vowels underwent various ablaut changes. These alternations served to indicate different types of grammatical formations. The most common alternation was the interchange between the vowels *\*e* and *\*a* in a given syllable. There was also an alternation among lengthened-grade vowels, normal-grade vowels, and reduced- and/or zero-grade vowels.

The Proto-Kartvelian phonological system may be reconstructed as follows (cf. Gamkrelidze 1967:709):

Obstruents:	p <sup>[h]</sup>	t <sup>[h]</sup>	c <sup>[h]</sup>	c <sup>[h]</sup> <sub>1</sub>	č <sup>[h]</sup>	k <sup>[h]</sup>	q <sup>[h]</sup>	
	b	d	ʒ	ʒ <sub>1</sub>	ž	g	g	
	p'	t'	c'	c' <sub>1</sub>	č'	k'	q'	
			s	s <sub>1</sub>	š	x		h
			z	z <sub>1</sub>	(ž)	γ		
Resonants:		m/ṃ	n/ṇ	l/ḷ	r/ṛ	y/i	w/u	
Vowels:			e, ē	o, ō	a, ā			

The Kartvelian languages are all highly inflected; Georgian, for example, has six basic grammatical cases plus eleven secondary cases. Nominal declension distinguishes between ergative and absolutive case forms; the ergative case is used to mark the subject of transitive verbs, while the absolutive case is used to mark direct objects and the subject of intransitive verbs. It is the dative case, however, that is used to mark the subject of so-called “inverted verbs”. There are several other departures from canonical ergative-type constructions, so much so in Mingrelian, for instance, that this language no longer possesses any true ergative features. Adjectives normally precede the nouns they modify. Postpositions are the rule. Verb morphology is particularly complicated — for example, Deeters lists eleven functional elements that may be arrayed around a given verb root, though they may not all appear simultaneously.

Syntactically, the predominant word order is SOV, though SVO is not uncommon.

#### 4.2. Afroasiatic

The Afroasiatic family consists of six separate branches: Semitic, Berber, Egyptian (now extinct), Cushitic, Omotic, and Chadic. Some languages (Akkadian and Egyptian, for example) have literary traditions going back many millennia, while some contemporary languages (especially Chadic languages) are barely known, let alone documented.

There are still many uncertainties regarding the reconstruction of the Proto-Afroasiatic phonological system, the sibilants being particularly troublesome. In general, I have followed the views of André Martinet (1975[1953]:248—61), David Cohen (1968: 1299—1306), and Igor M. Diakonoff (1992:5—35), though I have made minor adjustments to their proposals (for example, the addition of a series of palatalized velars) on the basis of my own research.

One of the most notable characteristics of Afroasiatic consonantism is the system of triads found in the stops and affricates — each series (except the lateralized affricates) is composed of three contrasting members: (1) voiceless (aspirated), (2) voiced, and (3) glottalized (that is, ejectives — these are the so-called “emphatics” of Semitic grammar). The lateralized affricate series probably lacked a voiced member. Another significant characteristic is the presence of a glottal stop, a voiceless laryngeal fricative, and voiced and voiceless pharyngeal fricatives. Proto-Afroasiatic may also have had a series of postvelars.

According to Diakonoff (1975:134—36), Proto-Afroasiatic had a vertical vowel system of \*ə and \*a as well as a series of syllabic resonants. In my opinion, the evidence from the non-Semitic branches of Afroasiatic does not appear to support the reconstruction of syllabic resonants for Proto-Afroasiatic. Diakonoff does not reconstruct long vowels for Proto-Afroasiatic (though see now Ehret 1995:55—57).

The Proto-Afroasiatic phonological system may tentatively be reconstructed as follows (cf. Diakonoff 1992:5—8, especially p. 6; a slightly different reconstruction is proposed in Ehret 1995 — neither Diakonoff nor Ehret posit palatalized velars):



Stops and Affricates:	p <sup>[h]</sup>	t <sup>[h]</sup>	c <sup>[h]</sup>	ʈ <sup>[h]</sup>	tʃ <sup>[h]</sup>	k <sup>[h]</sup>	k <sup>[h]</sup>	kʷ <sup>[h]</sup>	(q <sup>[h]</sup> )
	b	d	ʒ	dʏ		gʏ	g	gʷ	(G)
	p'	t'	c'	t'ʏ	tʃ'	k'ʏ	k'	k'ʷ	(q')
Fricatives:	f		s	sʏ					h
									ħ
									ʕ
Glides:	w			y					
Nasals and Liquids:	m	n	l	r					
Vowels:				ə					
				a					

In their new *Hamito-Semitic Etymological Dictionary*, Orël—Stolbova (1995:xvi) reconstruct a slightly reduced phonological system for Proto-Afroasiatic. They posit neither palatalized nor labialized velars, while they substitute the affricates \*č, \*č' (= \*č'), \*ʃ for my \*tʃ<sup>[h]</sup>, \*t'ʏ, \*dʏ respectively. On the other hand, they posit a full set of vowels (Orël—Stolbova 1995:xxi), as does Ehret (1995:55—57) — though, unlike Orël—Stolbova, Ehret posits phonemic long vowels as well:

Orël—Stolbova	i	ü		u
		e		o
			a	
Ehret	i, ii			u, uu
		e, ee	o, oo	
			a, aa	

Proto-Afroasiatic was most likely highly inflected. It is simply not possible, however, given the present level of knowledge, to reconstruct the morphological structure of the parent language in detail, though some common features (such as the distinction of grammatical gender and the existence of two verbal conjugational systems, at least one of which [the prefix conjugation] probably goes back to Proto-Afroasiatic) have been noted. Syntactically, the classical Semitic languages, Egyptian, and the Berber languages are VSO, the majority of Cushitic languages are SOV, and most Chadic languages are SVO. Good surveys of Afroasiatic morphology are found in Diakonoff 1988 and David Cohen (ed.) 1988.

### 4.3. Root Structure Patterning in Afroasiatic

It is necessary to be quite clear concerning my assumptions regarding root structure patterning in Proto-Afroasiatic, because the assumptions I have made here are critical to the viability of the lexical comparisons I have made between Afroasiatic and the other language families considered in this book. My assumptions are as follows (cf. Diakonoff 1975; Ehret 1989b:109—202 and 1995:15—54):

1. There were no initial vowels in the earliest form of Proto-Afroasiatic. Therefore every root began with a consonant.
2. Originally, there were no initial consonant clusters either. Consequently, every root began with one and only one consonant.
3. Two basic syllable types existed: (A) *\*CV* and (B) *\*CVC*, where *C* = any non-syllabic and *V* = any vowel. Permissible root forms coincided with these two syllable types.
4. A verb stem could either be identical with a root or it could consist of a root plus a single derivational morpheme added as a suffix to the root: *\*CVC-VC-*. Any consonant could serve as a suffix.
5. Primary (that is, non-derivational) noun stems displayed similar patterning, though, unlike verb stems, they were originally characterized by stable vocalism.

There were three fundamental stem types in Proto-Afroasiatic: (A) verb stems, (B) noun and adjective stems, and (C) pronoun and indeclinable stems. Only pronoun and indeclinable stems could end in a vowel. Verb and noun stems, however, had to end in a consonant (it may be noted that this is the stem patterning posited by Ehret [1980:45—47] for Proto-Southern Cushitic).

As in Proto-Indo-European, the consonants carried the basic meaning of the stem, while the vowels were used as modifiers: that is to say that grammatical categorization was partially achieved by means of fixed vocalic patterning, at least in the verb stems.

It is thus now certain beyond any reasonable doubt that the third consonantal element of the Proto-Semitic root, be it infix or suffix, was simply not a part of the root, in the overwhelming majority of cases, at the Proto-Afroasiatic level and that the underlying basic root structure patterning was biconsonantal.

### 4.4. Uralic-Yukaghir

Vowel harmony and consonant harmony are two notable phonological characteristics of the Uralic languages. In those Uralic languages exhibiting vowel harmony, the system is generally based upon a front ~ back contrast, most often with the vowels *i* and *e* being neutral in

regards to this contrast and thus able to combine freely with either front or back vowels, though absolute consistency is unusual. The vowel harmony systems found in the Uralic languages thus differ in this respect from those found in the Altaic languages, especially Turkic and Mongolian, where more consistent systems are the rule. As an active phonological feature, consonant harmony is not as widespread as vowel harmony, being found exclusively in Balto-Finnic and Lapp (though there are traces in Mordvin and Cheremis [Mari]). Consonant harmony is based upon a contrast, in different forms of the same word, between (1) medial voiceless geminated stops at the beginning of an open syllable versus medial single voiceless stops at the beginning of a closed syllable on the one hand and between (2) medial single voiceless stops at the beginning of an open syllable versus medial voiced stops, fricatives, or zero at the beginning of a closed syllable on the other hand. Diachronically, the system of consonant harmony may be viewed as a weakening of the phonetic value of a consonant before closed syllables. This resulted in a correlation of so-called "strong-grade" variants with open syllables and so-called "weak-grade" variants with closed syllables. Even though consonant harmony began as a purely phonetic process, however, it has since become morphologized in those languages where it developed, and a certain amount of leveling has also taken place. In Estonian, in particular, so many diachronic changes have taken place that there is no longer a readily discernible correlation between strong-grade and open syllables nor between weak-grade and closed syllables.

There are still many uncertainties regarding the reconstruction of the Proto-Uralic vowels. The system followed in this book for Proto-Uralic is based upon that proposed by Décsy (1990:22). In the Proto-Finno-Ugrian examples cited in this book, however, the vowels are generally given in accordance with Rédei (1986—1988). Décsy's system is as follows:

i	u
e	o
ä	a

Though front rounded and back (or central) unrounded vowels are typical characteristics of most Uralic languages, they are innovations and are not to be reconstructed for Proto-Nostratic.

There is broad agreement among Uralic scholars concerning Proto-Uralic consonantism. Though most consonants could appear both initially and medially, a small number were found only medially. Word initially, Proto-Uralic had the following sounds (cf. Collinder 1965:75—83): *\*p-*, *\*t-*, *\*k-*, *\*č-*, *\*tv-* (traditional *\*ć-*), *\*s-*, *\*sv-* (traditional *\*ś-*), *\*δv-* (traditional *\*δ'-*), *\*y-*, *\*w-*, *\*l-*, *\*lv-* (traditional *\*l'-*), *\*r-*, *\*nv-* (traditional *\*ñ-*), *\*n-*, and *\*m-*. Medially between vowels, the following sounds were found (cf. Collinder 1965:83—92): *\*-p-*, *\*-t-*, *\*-k-*, *\*-č-*, *\*-tv-*, *\*-s-*, *\*-sv-*, *\*-δ-*, *\*-γ-*, *\*-δ-*, *\*-δv-*, *\*-y-*, *\*-w-*, *\*-l-*, *\*-lv-*, *\*-r-*, *\*-ŋ-*, *\*-ŋk-*, *\*-ŋt-*, *\*-n-*, *\*-nt-*, *\*-nv-*, *\*-m-*, *\*-mt-*, and *\*-mp-*. Note: In my opinion, traditional *\*δ* and *\*δ'* are to be interpreted as the voiceless and voiceless palatalized dental lateral affricates *\*tʃ* and *\*tʃʲ* respectively — to maintain continuity with the traditional reconstruction, they are written *\*δ* and *\*δv* respectively in this book.

The Proto-Uralic consonant system may be reconstructed as follows (cf. Austerlitz 1968:1375—77; Décsy 1990:25; for sound correspondences, cf. Collinder 1965:75—103):

p	t	č	tʲ	k
	δ		δʲ	γ
	s	š	sʲ	
m	n		nʲ	ŋ
	r	l	lʲ	
w			y	

A slightly different system is reconstructed for Proto-Uralic by Sammallahti (1988:480—483):

p			m				w
t	s	c	n	d	r	l	
	sʲ		nʲ	dʲ			w
k			ŋ				
							x
			u	i	ü	i	
			o		e		
			å		ä		

Morphologically, the Uralic languages are underlying agglutinating, though many of the modern languages, especially Estonian, which has innovated considerably, have deviated from the original type. The original syntactic structure was probably SOV, and this is fairly well preserved in the modern Samoyed and Ob-Ugric languages (Ostyak [Xanty] and Vogul [Mansi]) and Cheremis (Mari). The basic word order in the other languages is SOV, though, as a general rule, word order in all Uralic languages is rather flexible. Hungarian stands apart, word order being determined here more by topic-comment considerations than in the other Uralic languages, so that neither SOV nor SVO can be said to be dominant.

#### 4.5. Elamo-Dravidian

Word initially, there were only voiceless stops in Proto-Dravidian. This is still the situation found in Tamil. On the basis of the reflexes found in South Dravidian languages and Telugu, a series of alveolars distinct from dentals and retroflexes has been reconstructed for Proto-Dravidian. A notable feature of Proto-Dravidian consonantism is the absence of sibilants. Medially, Proto-Dravidian had a contrast between geminated (including clusters of nasal plus consonant) and non-geminated consonants. Initially and medially in combination with other stops, *\*p*, *\*t*, *\*k*, and *\*c* were voiceless; between vowels and before nasals, they were voiced. The geminates were voiceless.

Proto-Dravidian had five short and long vowels plus the sequences \**ay* and \**aw*.

The reconstruction shown below is close to that set up by Kamil Zvelebil (1970: 77) for Proto-Dravidian; however, I have followed Thomas Burrow and Murray B. Emeneau (1984:xii—xiii) in the representation of the alveolar as \**ɹ* instead of \**ʈ*, even though the evidence from the Dravidian daughter languages seems to point to underlying /*t*/ at the Proto-Dravidian level. The reason for my decision to represent the Proto-Dravidian phoneme as \**ɹ* instead of \**ʈ* is based upon the observation that this phoneme corresponds to /*r*/ in the closely-related Elamite (though there is some room for interpretation here) as well as in the other Nostratic languages.

The Proto-Dravidian phonological system is to be reconstructed as follows:

p-	t-			c-	k-
-p-	-t-	-ɹ-	-ʈ-	-c-	-k-
-pp-	-tt-	-ɹɹ-	-ʈʈ-	-cc-	-kk-
-mp-	-nt-	-nɹ-	-nʈ-	-ñc-	-ñk-
-p(u)	-t(u)	-ɹ(u)	-ʈ(u)	-c(u)	-k(u)
m	n		ɳ	ɳ̃	
-mm-	-nn-		-ɳɳ-	-ɳ̃ɳ̃-	
v-	-r	-l	-ɹ	y	
-v-	-r-	-l-	-ɹ-	-y-	
			-ɻ		
			-ɻ-		
-vv-	-ll-		-ɻɻ-	-yy-	
(-v)					
	e	o	a	i	u
	ē	ō	ā	ī	ū

Morphologically, the Dravidian languages are agglutinating. The basic root type was monosyllabic, though there is some indication that an extremely small number of bisyllabic roots may have to be reconstructed at the Proto-Dravidian level as well. This is, however, by no means certain, and it is best at present to regard Proto-Dravidian roots as exclusively monosyllabic. Inflectional categorization was achieved by means of suffixes added directly to the lexical roots or to the lexical roots extended by means of derivational suffixes. Any vowel, long or short, could appear in a root, but only *a*, *i*, and *u* could appear in a suffix. Two basic parts of speech were differentiated in Proto-Dravidian: nouns and verbs. Nouns were inflected for case, person, number, and gender. Eight cases (nominative, accusative, sociative, dative, genitive, instrumental, locative, and ablative), two numbers (singular and plural), and two genders (animate and inanimate) are assumed to have existed in Proto-Dravidian. Verbs were inflected for tense and person. There were two tenses (past and non-past) and two moods (modal and indicative). Indeclinables existed as a separate stem type distinct from nouns and verbs. Syntactically, the basic word order was SOV.

## 4.6. Altaic

Probably the most notable characteristic of the Altaic languages is the assimilatory phenomenon known as “vowel harmony”. In the Turkic languages, for example, the first vowel segment occurring in a word influences the following vowel segments so that all vowels in the word have certain features in common. In Kirghiz, all of the vowels occurring in a given word must have the same feature for front ~ back and for rounded ~ unrounded, while height distinctions do not figure into the system of vowel harmony at all, so that high and non-high vowels can be freely combined in a word. It was the development of the system of vowel harmony that was responsible for the appearance of front rounded and back unrounded vowels in Altaic. These vowels are, thus, a later development and are not to be reconstructed for Proto-Nostratic.

In my recent book (Bomhard—Kerns 1994), I mostly followed the reconstruction of the Proto-Altaic phonological system proposed by Nicholas Poppe (1960), while I based the Proto-Altaic reconstructed forms upon those proposed by John Street (1974). According to Poppe, Proto-Altaic is assumed to have had a voicing contrast in stops and affricates, but, as he notes (1960:9—10), there is a possibility that the contrast could have been between voiceless aspirated and voiceless unaspirated stops and affricates instead. An entirely different approach is taken by Illič-Svityč (1971—:I.147—156), who reconstructs the three-way contrast of (1) voiceless aspirated, (2) plain voiceless, and (3) plain voiced for Proto-Altaic, and this is also the system followed by Starostin (1991) in his important new book. According to Poppe’s reconstruction, neither the liquids nor the velar nasal were used word initially, while the voiceless stops and voiceless dental affricate were strongly aspirated. Proto-Altaic also had a rich system of long and short vowels.

According to Poppe, the Proto-Altaic phonological system is to be reconstructed as follows:

p	t	č	k					
b	d	ž	g					
	s							
m	n	n <sup>y</sup>	-ŋ-					
-l- (= -l <sup>1</sup> -)		-l <sup>y</sup> - (= -l <sup>2</sup> -)						
-r- (= -r <sup>1</sup> -)		-r <sup>y</sup> - (= -r <sup>2</sup> -)						
		y						
a	o	u	i	e	è	ö	ü	ĩ
ā	ō	ū	ī	ē	ē	ō	ū	ī

According to Starostin (1991:5—24), on the other hand, the Proto-Altaic phonological system is to be reconstructed as follows:

p	t	č	k
p <sup>h</sup>	t <sup>h</sup>	č <sup>h</sup>	k <sup>h</sup>
b	d	ž	g
	s	š (?)	
	z (?)		
m	n	n <sup>y</sup>	-ŋ-
-l- (= -l <sup>1</sup> -)		-l <sup>y</sup> - (= -l <sup>2</sup> -)	
-r- (= -r <sup>1</sup> -)		-r <sup>y</sup> - (= -r <sup>2</sup> -)	
	-w-	-y-	
i	e	ä	ü
		ö	ı (ə) (?)
			u
			o
			a

Morphologically, the Altaic languages are agglutinating in structure. Syntactically, the original structure was SOV, and this is well preserved in the modern languages, especially the Turkic languages, which are fairly strict in this regard, while more freedom is found in the Mongolian and (Manchu-)Tungus languages.

#### 4.7. Sumerian

In a series of privately-circulated papers, Claude Boisson has explored lexical parallels between Sumerian and other languages, especially the Nilo-Saharan and Nostratic languages. Boisson has been very careful not to draw wild conclusions from the data he has amassed about possible relationship of Sumerian to other languages or language families. Yet, the lexical parallels he has uncovered between Sumerian and the Nostratic languages, especially Dravidian, though not numerous, look very promising and permit one to establish tentative sound correspondences between Sumerian and the rest of Nostratic.

The Sumerian cuneiform syllabary distinguished the following sounds:

p	t		k
b	d		g
	s	š	h
	z		
m	n		ḡ (= ŋ)
	l		
	r		
a	e	i	u

There may have been corresponding long vowels as well. There were no initial consonant clusters, while final consonants, especially *t*, *d*, *k*, *g*, *m*, *n*, and *r*, were often omitted in the writing

(cf. Thomsen 1984:43), and this often makes it difficult to ascertain the form of the word. Internally, there was a tendency for consonants to assimilate. The traditional transliteration shows a voicing contrast in stops. There is a very strong probability, however, that the actual contrast was between voiceless aspirated versus voiceless unaspirated or simply between tense versus lax (cf. Boisson 1988b:215—19; Thomsen 1984: 43): traditional *p*, *t*, *k* = *p<sup>h</sup>*, *t<sup>h</sup>*, *k<sup>h</sup>* respectively, while traditional *b*, *d*, *g* = *p*, *t*, *k* respectively. Traditional *z* may have been an affricate (cf. Boisson 1989b:221—26). Lastly, Bauer's proposed *d<sup>r</sup>* (cf. Thomsen 1984:44) is highly questionable (cf. Boisson 1989b:212—14). For a discussion of the problems involved in interpreting Sumerian phonetics and phonology, cf. Diakonoff 1992:125—129.

The Sumerian root was generally monosyllabic: *CV*, *VC*, and, most often, *CVC*. There was no distinction between verbal roots and nominal roots — thus, for example *dùg* could mean either “good” or “to be good”.

There is still not, even after more than a century of intensive study, widespread agreement among experts in the fields on many fundamental questions of Sumerian grammar. Nevertheless, the overall structure is clear. Morphologically, Sumerian was an agglutinating language. Three word classes were distinguished: nouns, verbs, and adjectives. Grammatical gender proper did not exist, but there was a morphological distinction made between animate and inanimate. Sumerian differentiated between ergative and absolutive in nouns. In pronouns, however, the patterning is that of a nominative-accusative system. Syntactically, the basic word order was SOV.

In the Sumerian texts, certain non-standard forms of speech can be discerned. It is not entirely clear what this means — perhaps different dialects, perhaps not; perhaps so-called “refined speech”, perhaps not. These forms, which have been encountered mostly in religious texts, were labeled “Emesal” by the scribes, while the standard forms were labeled “Emegir”.

#### 4.8. Eskimo-Aleut

While Proto-Eskimo-Aleut has not yet been reconstructed, great progress has been made in reconstructing Proto-Eskimo. There is now a *Comparative Eskimo Dictionary With Aleut Cognates* (1994) by Michael Fortescue, Steven Jacobson, and Lawrence Kaplan, in which Proto-Eskimo forms are posited. According to Fortescue, Jacobson, and Kaplan (1994:xi), the Proto-Eskimo phonological system is to be reconstructed as follows (note: the authors also list several non-Proto-Eskimo phonemes in their chart — these are not included below):

p	t	c (= č)	k	q
v	ð	y	γ	ʀ
	l			
	ʃ			
m	n		ŋ	



i                      u  
                           ə  
                           a

#### 4.9. Proto-Nostratic

Proto-Nostratic had a rich system of stops and affricates. Each stop and affricate series was characterized by the three-way contrast (1) voiceless (aspirated), (2) voiced, and (3) glottalized. The aspiration of series (1) was phonemically non-distinctive.

Three primary vowels may be reconstructed for Proto-Nostratic: *\*a*, *\*i*, and *\*u*, and this, along with the addition of the vowel *e*, is the situation reflected in Sumerian, which is particularly conservative in regards to vocalism. These vowels must have been subject to considerable subphonemic variation in the Nostratic parent language. The high front and back vowels *\*i* and *\*u* may be assumed to have had lowered variants (indicated in the Proto-Nostratic reconstructions as *\*e* and *\*o* respectively), while the central low vowel *\*a* may be assumed to have had higher variants (indicated in the Proto-Nostratic reconstructions as *\*ə*). It was the reanalysis, phonemicization, and exploitation of this subphonemic variation that gave rise to the ablaut and vowel harmony patterning found in the majority of the Nostratic daughter languages. In Afroasiatic, on the other hand, the high allophones merged into *\*ə*, and the low allophones merged into *\*a*. It is unclear whether phonemic long vowels existed in Proto-Nostratic as well, though the evidence seems to indicate that they did not.

The Proto-Nostratic phonological system may tentatively be reconstructed as follows:

Stops and Affricates:	p <sup>[h]</sup>	t <sup>[h]</sup>	c <sup>[h]</sup>	tʃ <sup>[h]</sup>	tʃ <sup>[h]</sup>	kʏ <sup>[h]</sup>	k <sup>[h]</sup>	kʷ <sup>[h]</sup>	q <sup>[h]</sup>	
	b	d	ʒ	dʏ		gʏ	g	gʷ	ɢ	
	pʼ	tʼ	cʼ	tʃʼ	tʃʼ	kʼʏ	kʼ	kʷʼ	qʼ	qʷʼ
										?
Fricatives:	s	sʏ					h	ħ		
								ʃ		
Glides:	w			y						
Nasals and Liquids:	m	n		nʏ			ŋ			
		l		lʏ						
		r		rʏ						
Vowels:		i ~ e				u ~ o				
				ə ~ a						

Also the sequences:      iy ~ ey      uy ~ oy      əy ~ ay  
                                  iw ~ ew      uw ~ ow      əw ~ aw

The palatalized velars are reconstructed solely on the basis of the reflexes found in Afroasiatic, and their reconstruction at the Proto-Nostratic level is, therefore, highly uncertain. I would like to be able to propose that the Afroasiatic reflexes are due to an innovation in which plain velars were palatalized before front vowels, but the evidence I have gathered to date is simply too contradictory to allow me to make such a statement with even a modicum of certainty.

We may note in passing that the vowel system reconstructed above for Proto-Nostratic is similar to that found in Chukchi (cf. Greenberg 1990:115):

High:	i	e	u	
				ə
Low:	e	a	o	

The Chukchi vowels form a system of vowel harmony in which the second correspondent (*e, a, o*) is labeled “dominant”, and the first (*i, e, u*) “recessive”. Native Chukchi words must contain either all “dominant” or all “recessive” vowels; the two correspondents cannot co-exist in the same word. The schwa (ə) is neutral in regards to the “dominant” ~ “recessive” contrast.

The system of vowel harmony found in Chukchi operates according to different principles than the system found, for example, in Altaic. In Altaic, the direction of vowel harmony is determined by the vowel of the root. In Chukchi, on the other hand, a particular morpheme is either “dominant” or “recessive”; it is the vowel of the “dominant” morpheme (this need not be the root) that influences the remaining vowels.

According to Greenberg (1990), traces of an earlier system of vowel harmony can be discerned in Proto-Indo-European.

#### 4.10. Root Structure Patterning in Proto-Nostratic

Comparison of the various Nostratic daughter languages, especially Proto-Indo-European, Proto-Kartvelian, and Proto-Afroasiatic, makes it possible to determine the rules governing the structural patterning of roots and stems in Proto-Nostratic. Most likely, the patterning was as follows:

1. There were no initial vowels in Proto-Nostratic. Therefore, every root began with a consonant.
2. Originally, there were no initial consonant clusters either. Consequently, every root began with one and only one consonant. Medial clusters were permitted, however.

3. Two basic root types existed: (A) *\*CV* and (B) *\*CVC*, where *C* = any non-syllabic, and *V* = any vowel. Permissible root forms coincided exactly with these two syllable types.
4. A stem could either be identical with a root or it could consist of a root plus a single derivational morpheme added as a suffix to the root: *\*CVC-VC-*. Any consonant could serve as a suffix.
5. A stem could thus assume any one of the following shapes: (A) *\*CV-*, (B) *\*CVC-*, (C) *\*CVC-VC-* (*\*CVC-C-* as well, before vowels), or (D) *\*CVC-CVC-*. As in Proto-Altaic, the undifferentiated stems were real forms in themselves and could be used without additional suffixes.

The original root structure patterning was maintained longer in Proto-Indo-European, Proto-Kartvelian, and Proto-Afroasiatic than in the other branches. The root structure constraints found in Proto-Indo-European were an innovation. Both the Proto-Dravidian and the Proto-Altaic root structure patterning can be derived from earlier systems identical to what is proposed above for Proto-Nostratic. In Proto-Uralic, the rule requiring that all words end in a vowel was an innovation. It should be mentioned here that reduplication was a widespread phenomenon.

On the basis of the evidence of Proto-Indo-European, Proto-Kartvelian, Proto-Afroasiatic, Proto-Dravidian, and Proto-Altaic, it may be assumed that there were three fundamental stem types: (A) verbal stems, (B) nominal and adjectival stems, and (C) pronominal and indeclinable stems. Both verbal stems and nominal stems could be built from the same root. Uralic stands apart in showing no differentiation between verbal and nominal stems. In Sumerian, though nominal and verbal roots were identical in form, three separate word classes were distinguished: (A) nouns, (B) verbs, and (C) adjectives. Returning to Proto-Nostratic, only pronominal and indeclinable stems could end in a vowel. Verbal and nominal stems, on the other hand, had to end in a consonant (though vowels could serve as grammatical markers).

Morphologically, Proto-Nostratic was most likely an agglutinating language. Those daughter languages that are highly inflected, namely, Proto-Indo-European, Proto-Kartvelian, and Proto-Afroasiatic, may be assumed to have gone through earlier periods of development as agglutinating languages. Such a development is suggested for Proto-Indo-European by Bomhard (1988:475—88) and, in particular, Rasmussen (1987:107—22); see also Adrados (1989).

#### 4.11. Nostratic Sound Correspondences

The following tables summarize the sound correspondences existing among those branches of Nostratic dealt with in this book. These correspondences are based upon the analysis of the lexical material that forms the core of the joint monograph by me and John C. Kerns (Bomhard—Kerns 1994).

Table 2: Nostratic Sound Correspondences

Proto-Nostratic	Proto-IE	Proto-Kartvelian	Proto-Afroasiatic	Proto-Uralic	Proto-Dravidian	Proto-Altaic	Sumerian
b-	b[h]-	b-	b-	p-	p-	b-	b-
-b-	-b[h]-	-b-	-b-	-w-	-pp-/vv-	-b-	-b-
p[h]-	p[h]-	p[h]-	p[h]-	p-	p-	p-	p-
-p[h]-	-p[h]-	-p[h]-	-p[h]-	-p-	-pp-/v-	-p-/b-	-p-
p'-	(p'-)	p'-	p'-				
-p'-	(-p'-)	-p'-	-p'-				
d-	d[h]-	d-	d-	t-	t-	d-	d-
-d-	-d[h]-	-d-	-d-	-t-	-t(t)-	-d-	-d-
t[h]-	t[h]-	t[h]-	t[h]-	t-	t-	t-	t-
-t[h]-	-t[h]-	-t[h]-	-t[h]-	-t(t)-	-t(t)-	-t-	-t-
t'-	t'-	t'-	t'-	t-	t-	t-	d-
-t'-	-t'-	-t'-	-t'-	-t-	-t(t)-	-d-	-d-
dy-	d[h]-	ž-	dy-	ty-	c-	ž-	d-
-dy-	-d[h]-	-ž-	-dy-	-ty-	-c(c)-	-ž-/d-	-d-
ty[h]-	t[h]-	č[h]-	ty[h]-	ty-	c-	č-	š-
-ty[h]-	-t[h]-	-č[h]-	-ty[h]-	-ty-	-c(c)-	-č-	-š-
t'y-	t'-	č'-	t'y-	ty-	c-	č-	d-
-t'y-	-t'-	-č'-	-t'y-	-tyty-	-c(c)-	-ž-	-d-
sy-	s-	š-	sy-	sy-	c-	s-	š-
-sy-	-s-	-š-	-sy-	-sy-	-c(c)-/y-	-s-	-š-
3-	d[h]-	3 <sub>1</sub> -	3-	č-	c-	ž-	z-
-3-	-d[h]-	-3 <sub>1</sub> -	-3-	-č-	-c(c)-	-ž-/d-	-z-
c[h]-	t[h]-	c[h] <sub>1</sub> -	c[h]-	č-	c-	č-	s-
-c[h]-	-t[h]-	-c[h] <sub>1</sub> -	-c[h]-	-č-	-c(c)-	-č-	-s-
c'-	t'-	c' <sub>1</sub> -	c'-	č-	c-	č-	z-
-c'-	-t'-	-c' <sub>1</sub> -	-c'-	-č-	-c(c)-	-ž-	-z-
s-	s-	s <sub>1</sub> -	s-	s-	c-	s-	s-
-s-	-s-	-s <sub>1</sub> -	-s-	-s-	-c(c)-	-s-	-s-

Proto-Nostratic	Proto-IE	Proto-Kartvelian	Proto-Afroasiatic	Proto-Uralic	Proto-Dravidian	Proto-Altaic	Sumerian
g-	g[h]-	g-	g-	k-	k-	g-	g-
-g-	-g[h]-	-g-	-g-	-γ-	-k-	-g-	-g-
k[h]-	k[h]-	k[h]-	k[h]-	k-	k-	k-	k-
-k[h]-	-k[h]-	-k[h]-	-k[h]-	-k(k)-	-k(k)-	-k-/g-	-k-
k'-	k'-	k'-	k'-	k-	k-	k-	g-
-k'-	-k'-	-k'-	-k'-	-k-	-k(k)-	-g-	-g-
gʷ-	g[h]-	g-	gʷ-	k-	k-	g-	g-
-gʷ-	-g[h]-	-g-	-gʷ-	-γ-	-k-	-g-	-g-
ky[h]-	k[h]-	k[h]-	ky[h]-	k-	k-	k-	k-
-ky[h]-	-k[h]-	-k[h]-	-ky[h]-	-k(k)-	-k(k)-	-k-/g-	-k-
k'y-	k'-	k'-	k'y-	k-	k-	k-	g-
-k'y-	-k'-	-k'-	-k'y-	-k-	-k(k)-	-g-	-g-
gʷ-	gʷ[h]-	gw/u-	gʷ-	k-	k-	g-	gu-
-gʷ-	-gʷ[h]-	-gw/u-	-gʷ-	-γ-	-k-	-g-	-gu-
kʷ[h]-	kʷ[h]-	k[h]w/u-	kʷ[h]-	k-	k-	k-	ku-
-kʷ[h]-	-kʷ[h]-	-k[h]w/u-	-kʷ[h]-	-k(k)-	-k(k)-	-k-/g-	-ku-
k'w-	k'w-	k'w/u-	k'w-	k-	k-	k-	gu-
-k'w-	-k'w-	-k'w/u-	-k'w-	-k-	-k(k)-	-g-	-gu-
G-	g[h]-	G-	g-	k-	k-	g-	g-
-G-	-g[h]-	-G-	-g-	-γ-	-k-	-g-	-g-
q[h]-	k[h]-	q[h]-	k[h]-	k-	k-	k-	h- (?)
-q[h]-	-k[h]-	-q[h]-	-k[h]-	-k(k)-	-k(k)-	-k-/g-	-h- (?)
q'-	k'-	q'-	k'-	k-	k-	k-	g-
-q'-	-k'-	-q'-	-k'-	-k-	-k(k)-	-g-	-g-
q'w-	k'w-	q'w/u-	k'w-	k-	k-	k-	gu-
-q'w-	-k'w-	-q'w/u-	-k'w-	-k-	-k(k)-	-g-	-gu-

Proto-Nostratic	Proto-IE	Proto-Kartvelian	Proto-Afroasiatic	Proto-Uralic	Proto-Dravidian	Proto-Altaic	Sumerian
tʃ[h]-	k[h]-	x-	tʃ[h]-	sy-	c-	k-	
-tʃ[h]-	-k[h]-	-x-	-tʃ[h]-	-δ-	-k-	-k-/g-	
tʃʷ-	kʷ-		tʃʷ-	δy-	t-	k-	d-
-tʃʷ-	-kʷ-		-tʃʷ-	-δy-	-t(t)-	-g-	-d-
ʃ-	ʃh-	Ø-	ʃ-	Ø-	Ø-	Ø-	
-ʃ-	-ʃh-	-Ø-	-ʃ-	-Ø-	-Ø-	-Ø-	
ħ-	ħh-	x-	ħ-	Ø-	Ø-	Ø-	h-
-ħ-	-ħh-	-x-	-ħ-	-Ø-	-Ø-	-Ø-	-h-
?-	?-	Ø-	?-	Ø-	Ø-	Ø-	Ø-
-?-	-?-	-Ø-	-?-	-Ø-	-Ø-	-Ø-	-Ø-
h-	h-	Ø-	h-	Ø-	Ø-	Ø-	Ø-
-h-	-h-	-Ø-	-h-	-Ø-	-Ø-	-Ø-	-Ø-
y-	y-	y-/Ø-	y-	y-	y-/Ø-	y-	
-y-	-y-		-y-	-y-	-y-	-y-	
w-	w-	w-	w-	w-	v-/Ø-		
-w-	-w-	-w-	-w-	-w-	-v-		
m-	m-	m-	m-	m-	m-	m-	m-
-m-	-m-	-m-	-m-	-m-	-m-	-m-	-m-
n-	n-		n-	n-	n-		n-
-n-	-n-	-n-	-n-	-n-	-n-/n̄-	-n-	-n-
nʷ-	n-		n-	nʷ-	ñ-	nʷ-	
-nʷ-	-n-		-n-	-nʷ-	-n̄-	-nʷ-	
-ŋ-	-n-		-n-	-ŋ-	-n̄-	-ŋ-	
l-	l-	l-	l-	l-	l-		l-
-l-	-l-	-l-	-l-	-l-	-l-	-l-	-l-
-ly-	-l-	-l-	-l-	-ly-	-l̄-	-ly-	
r-	r-	r-	r-	r-			r-
-r-	-r-	-r-	-r-	-r-	-r-/r̄-	-r-	-r-
-rʷ-	-r-	-r-	-r-	-rʷ-	-r̄-	-rʷ-	

Proto-Nostratic	Proto-Indo-European	Proto-Kartvelian	Proto-Afroasiatic
i	i, e	i	ə
ə	e, a, ə	e, i	ə
u	u, o	u	ə
e	e	e	a
a	a, o, ə	a	a
o	o	o	a
iy	īy, ey, ī, ē, ĭ	iy, i	əy
əy	ey, ay, ĭy, ĭ	ey, i	əy
uy	īy, ī, ĭ	uy, i	əy
ey	ey, ĭy, ē, ĭ	ey, i	ay
ay	ay, oy, ĭy, ĭ	ay, i	ay
oy	oy, ĭy, ĭ	oy, i	ay
iw	ū, ūw, ū	iw, u	əw
əw	ew, aw, ūw, ū	ew, u	əw
uw	ū, ō, ūw, ow, ū	uw, u	əw
ew	ew, ūw, ū	ew, u	aw
aw	ow, ūw, ū	aw, u	aw
ow	ō, ow, ūw, ū	ow, u	aw

Proto-Nostratic	Proto-Uralic	Proto-Dravidian	Proto-Altaic	Sumerian
i	i	i	i, ĭ	i
ə	e	e	e	e
u	u	u	u, ū	u
e	e	e	e	e
a	a, ä	a	a	a
o	o	o	o, ȯ	u
iy	iy, i	iy, ĭ	ĭ, ĭ̄	i
əy	ey	ey, ē	ē, i, ĭ̄	i
uy	uy	uy, ū		i
ey	ey, e	ey, ē	ēy, ē̄	e
ay	ay, äy	ay, ā	a, i, ĭ̄	e
oy	oy	oy, ȯ		e
iw	iw	iv, ĭ		u
əw	ew	ev, ē		u
uw	uw, u	uv, ū	ū, ū̄	u
ew	ew	ev, ē		u
aw	aw, äw	av, ā	ȯ, ȱ	u
ow	ow, o	ov, ȯ	ȯ, ȱ	u



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## Indo-European and Nostratic

### 5.1. Introduction

Before looking into how comparison with other Nostratic languages can shed light on a few selected problem areas within Indo-European, it would be useful to discuss some salient characteristics of Indo-European. Morphologically, Proto-Indo-European was a highly inflected language — except for particles, conjunctions, and certain quasi-adverbial forms, all words were inflected. The basic structure of inflected words was as follows: *root* + *suffix* (one or more) + *inflectional ending*. A notable morphophonemic characteristic was the extensive use of a system of vocalic alternations (“Ablaut” in German) as a means to mark morphological distinctions (it may be noted that similar patterning is found in Kartvelian [cf. Gamkrelidze—Mačavariani 1982:93—100]). For nouns and adjectives, three genders (masculine, feminine, and neuter), three numbers (singular, dual, and plural), and as many as eight cases (nominative, accusative, genitive, dative, locative, ablative, instrumental, and vocative) have been reconstructed. The traditional reconstruction of the Proto-Indo-European verbal system (cf. Szemerényi 1990:245) sets up two voices (active and middle), four moods (indicative, subjunctive, optative, and imperative), and as many as six tenses, though only three (present, aorist, and perfect) can be posited with certainty. Syntactically, Proto-Indo-European seems to have had many of the characteristics of an SOV language, though there must, no doubt, have been a great deal of flexibility in basic word order patterning.

It is doubtful that all of the features described in the preceding paragraph were ancient — it is indeed possible to discern several chronological layers of development, and several scholars have attempted to delineate the various stages of development (cf., for example, Adrados 1992, Georgiev 1984, Rasmussen 1987 and 1989, and Shields 1982 [summary on pp. 94—97]). Typically, three stages are posited (so Adrados and Georgiev — Shields posits five), the first stage (Stage I) invariably being “non-inflectional”, the second (Stage II) having a simple inflectional system, and the third (Stage III) having a highly-developed inflectional system. Stage I, “non-inflectional”, finds no support in cognate Nostratic languages. Indo-European is a member of the Eurasiatic branch of Nostratic, and all indications are that Proto-Eurasiatic had an agglutinating morphological structure, from which the Proto-Indo-European inflectional system developed. The earliest form of Proto-Indo-European that can be recovered may be assumed to have had a simpler inflectional system than what is found, for example, in Old Indic (Vedic and Classical Sanskrit) or Classical Greek, both of which have expanded upon the earlier system. Hittite and the other Anatolian languages (Hieroglyphic and Cuneiform Luwian, Palaic, Lycian, Lydian) may be assumed to have separated from the main speech community at a very early date, before the morphological system had fully developed the morphological structure ancestral to

later stage languages such as Latin, Old Indic, Greek, etc. Thus, the Anatolian languages reflect the simpler morphological system of early Proto-Indo-European. A note of caution: Hittite has clearly innovated as well and may even have lost some features.

Let us now look at Indo-European and address the question of what is to be gained by comparing Indo-European with the other Nostratic languages. The following gains may be mentioned as being among the most important:

1. a better understanding of the laryngeals,
2. a better understanding of root structure patterning,
3. a better understanding of the origin of verb morphology,
4. clarification of issues surrounding the origin and development of nominal declension,
5. a better understanding of the origin and development of vowel gradation, and
6. support for the glottalic reinterpretation of Indo-European consonantism.

We may now look at each one of these in more detail:

## 5.2. Laryngeals

According to Kuryłowicz and those who follow his theories (such as Sturtevant and Lehmann, among others), Indo-European is assumed to have had four laryngeals, which may be symbolized as  $*H_1$ ,  $*H_2$ ,  $*H_3$ , and  $*H_4$  (Kuryłowicz writes  $*\mathfrak{h}_1$ ,  $*\mathfrak{h}_2$ ,  $*\mathfrak{h}_3$ , and  $*\mathfrak{h}_4$ ). Other scholars posit only three laryngeals, denying the existence of  $*H_4$ , and, still others posit as few as one laryngeal or as many as twelve. For the sake of argument, we will stick with the four laryngeals posited by Kuryłowicz. Now, of the other Nostratic branches, only Afroasiatic has a full set of laryngeals. Though Semitic is traditionally assumed to have had six laryngeals, the Afroasiatic parent language most likely had only four, namely, a glottal stop /ʔ/, a voiceless laryngeal (or glottal) fricative /h/, and voiceless and voiced pharyngeal fricatives /ħ/ and /ʕ/. Extremely good correspondences can be established between Afroasiatic and Indo-European, and, as a result, it is now possible to establish the probable phonetic values of the laryngeals: we can confirm that  $*H_1$  was a glottal stop /ʔ/ and  $*H_4$  was a voiceless laryngeal fricative /h/ as originally suggested by Sapir, Sturtevant, and Lehmann, while  $*H_2$  was probably the voiceless and voiced multiply-articulated pharyngeal/laryngeal fricatives /ħh/ and /ʕʕ/, and  $*H_3$  was probably originally identical to  $*H_2$ . That is to say that there is no evidence from the other Nostratic languages to support positing  $*H_3$  distinct from  $*H_2$  in Indo-European. Note that both of these two laryngeals have the same reflex in Hittite, namely,  $\mathfrak{h}$ - (initially) and  $-\mathfrak{h}$ - (medially). The only reason that two separate laryngeals were set up in Indo-European by Kuryłowicz in the first place was to account for several cases of nonapophonic  $*o$ . However, these examples can be accounted for much better by assuming that this single, combined  $*H_2$  and  $*H_3$  changed a contiguous original  $*u$  to  $*o$  along the lines of what is found in modern Arabic dialects. (It should be noted here that

/ħh/ and /ʕf/ are to be derived from earlier voiceless and voiced pharyngeal fricatives /ħ/ and /ʕ/ respectively — for details on the development of the laryngeals in Indo-European, cf. Bomhard—Kerns 1994:47—56; for a good introduction to the Laryngeal Theory, see Lindeman 1987; see also Keiler 1970 and Winter [ed.] 1965.)

### 5.3. Root Structure Patterning

In a work published in 1935 entitled (in English translation) *Origins of the Formation of Nouns in Indo-European*, the French Indo-Europeanist Emile Benveniste (1935:147—173) carefully analyzed the patterning of roots in Indo-European and was able to discern the underlying principles governing that patterning. Now, comparison of Indo-European with the other Nostratic branches, especially Kartvelian and Afroasiatic, allows us to refine the theories of Benveniste and, in so doing, to trace the development of root structure patterning from the earliest times down to the appearance of the individual daughter languages. The most ancient patterning may be assumed to have been as follows:

1. There were no initial vowels in the earliest form of pre-Indo-European. Therefore, every root began with a consonant.
2. Originally, there were no initial consonant clusters either. Consequently, every root began with one and only one consonant.
3. Two basic syllable types existed: (A) \*CV and (B) \*CVC, where C = any non-syllabic and V = any vowel. Permissible root forms coincided exactly with these two syllable types.
4. A verbal stem could either be identical with a root or it could consist of a root plus a single derivational morpheme added as a suffix to the root: \*CVC-VC-. Any consonant could serve as a suffix.
5. Nominal stems, on the other hand, could be further extended by additional suffixes.

In the earliest form of Indo-European, there were three fundamental stem types: (A) verbal stems, (B) nominal and adjectival stems, and (C) pronominal and indeclinable stems.

The phonemicization of a strong stress accent disrupted the patterning outlined above. The positioning of the stress was morphologically distinctive, serving as a means to differentiate grammatical categories. All vowels were retained when stressed but were either weakened (= “reduced-grade”) or totally eliminated (= “zero-grade”) when unstressed: the choice between the reduced-grade versus the zero-grade depended upon the position of the unstressed syllable relative to the stressed syllable as well as upon the laws of syllabicity in effect at that time. Finally, it was at this stage of development that the syllabic allophones of the resonants came into being.

The stress-conditioned ablaut alternations gave rise to two distinct forms of extended stems:

Type 1: Root in full-grade and accented, suffix in zero-grade: *\*CVCC-*.

Type 2: Root in zero-grade, suffix in full-grade and accented: *\*CCVC-*.

When used as a verbal stem, Type 1 could undergo no further extension. However, Type 2 could be further extended by means of a “determinative”. Further addition of a determinative or suffixes pointed to a nominal stem. According to Benveniste, a “suffix” was characterized by two alternating forms (*\*-et-/\*-t-*, *\*-en-/\*-n-*, *\*-ek-/\*-k-*, etc.), while a “determinative” was characterized by a fixed consonantal form (*\*-t-*, *\*-n-*, *\*-k-*, etc.).

In its beginnings, ablaut was merely a phonological alternation. During the course of its development, however, Indo-European gradually grammaticalized these ablaut alternations.

Indo-European had constraints on permissible root structure sequences. In terms of the radical revision of the Indo-European consonant system proposed by Gamkrelidze, Hopper, and Ivanov, these constraint laws may be stated as follows:

1. Each root contained at least one non-glottalic consonant.
2. When both obstruents were non-glottalic, they had to agree in voicing.

The Indo-European root structure constraint laws thus become merely a voicing agreement rule with the corollary that two glottalics cannot cooccur in a root. Comparison of Indo-European with the other Nostratic branches indicates, however, that the forbidden root types must have once existed. Two rules may be formulated to account for the elimination of the forbidden types:

1. A rule of progressive voicing assimilation may be set up to account for the elimination of roots whose consonantal elements originally did not agree in voicing: *\*T ~ \*B > \*T ~ \*P*, *\*B ~ \*T > \*B ~ \*D*, etc.
2. A rule of regressive deglottalization may be set up to account for the elimination of roots containing two glottalics: *\*T' ~ \*K' > \*T ~ \*K'*, etc. This rule finds a close parallel in Geers' Law in Akkadian.

According to Gamkrelidze, Bartholomae's Law is a later manifestation of the progressive voicing assimilation rule, applied to contact sequences.

In a number of works, John Colarusso has explored typological parallels between Indo-European and Northwest Caucasian. In an article published in 1992 entitled “Phyletic Links between Proto-Indo-European and Proto-Northwest Caucasian”, he attempted to show that these two language families were in fact genetically related. One of the areas explored by Colarusso was stem formation. After discussing Benveniste's theory of the Indo-European root, he suggests that at least some Indo-European roots might be better explained if the first part is

analyzed not as a morpheme but rather as a preverb, while the enlargements are seen not as enlargements but rather as roots, similar to the patterning observed in Northwest Caucasian. While Colarusso's theories about a genetic relationship between Indo-European and Northwest Caucasian have not met with acceptance, his views on stem formation merit further research.

#### 5.4. Verb Morphology

Comparison of Indo-European with Uralic reveals many striking similarities in verb morphology and allows us to ascertain the ultimate origin of the athematic verb endings: they can be nothing else but agglutinated personal pronouns. The earliest forms of the athematic endings were most likely as follows (for details, cf. Bomhard 1988; see also Villar 1991:244—252):

Person	Singular	Plural
1	*- <i>m</i>	*- <i>me</i>
2	*- <i>t</i>	*- <i>te</i>
3	*- <i>s</i> , *- $\emptyset$	*- <i>se</i>

This earlier system may be partially preserved in Tocharian A, where the athematic endings are as follows:

Person	Singular	Plural
1	-( <i>ä</i> ) <i>m</i>	- <i>mäs</i>
2	-( <i>ä</i> ) <i>t</i>	- <i>c</i>
3	-( <i>ä</i> ) <i>š</i>	-( <i>i</i> ) <i>ñc</i>

Note: There are phonological problems with the 3rd singular ending *-(ä)š* — had this been inherited directly from Proto-Indo-European \*-*si*, we would expect *-(ä)s*, not *-(ä)š*. The best explanation is that of Pedersen, who derived this ending from an enclitic \*-*se*.

Now compare the following system of personal endings, which are assumed to have existed in Proto-Uralic (cf. Hajdú 1972:40 and 43—45):

Person	Singular	Plural
1	*- <i>me</i>	*- <i>me</i> (+ Plural)
2	*- <i>te</i>	*- <i>te</i> (+ Plural)
3	*- <i>se</i>	*- <i>se</i> (+ Plural)

These endings survive in Elamite as well, especially in the 2nd and 3rd persons (by the way, the 1st singular ending, *-h*, is, of course, related to the 1st singular perfect ending *\*-Ae* of traditional Indo-European, which is found, for example, in Luwian in the 1st singular preterite ending *-ha*, in Hittite in the 1st singular ending *-hi*, and in Greek in the 1st singular perfect ending *-a*; this ending may also be related to the Kartvelian 1st person personal prefix of the subject series, *\*xw-* [Gamkrelidze—Mačavariani 1982:85 reconstruct *\*w-*, however], as suggested by Ivanov and Palmaitis) — compare, for example, the conjugation of *hutta-* “to do, to make” from Middle Elamite (cf. Reiner 1969:76; Grillot-Susini 1987:33):

Person	Singular	Plural
1	<i>hutta-h</i>	<i>hutta-hu</i> (< <i>h + h</i> )
2	<i>hutta-t</i>	<i>hutta-ht</i> (< <i>h + t</i> )
3	<i>hutta-š</i>	<i>hutta-hš</i> (< <i>h + š</i> )

Traces of the 2nd singular ending are also found in Dravidian — McAlpin (1981:120) reconstructs Proto-Elamo-Dravidian 2nd person ending *\*-ti* (> Proto-Elamite *\*-tə*, Proto-Dravidian *\*-ti*). This is a significant archaism, since it bears no apparent resemblance to the common Elamo-Dravidian 2nd person personal pronoun stem, which McAlpin (1981:114—115) reconstructs as *\*ni* and which may be an innovation (cf. Dolgopolsky 1984:87—88 and 100; Dolgopolsky posits Proto-Elamo-Dravidian *\*nün*, which he derives from *\*tün* through assimilation), though Greenberg (forthcoming) discusses the possibility that there may have been a second person pronoun stem *\*nV* in Eurasiatic.

Traces of these endings can be found in the Altaic languages too, as in the Turkish agreement markers *-(I)m* (1st singular) and *-Ø* (3rd singular verbal) or *-(s)I(n)* (3rd singular nominal). In Proto-Turkic, the 1st singular possessive suffix was *\*-m*, while the 3rd singular was *\*-s* (cf. Sinor 1988:725). According to Sinor (1988:725), the 1st singular possessive suffix was also *\*-m* in Proto-Tungus, and the 2nd singular was *\*-t* — the 3rd singular possessive suffix, on the other hand, was *\*-n*, which mirrors what is found in Sumerian (see below). Finally, we may note that a 3rd singular in *-s* is also found in Kartvelian (cf. Old Georgian *c'er-s* “writes”)

The 2nd singular ending *\*-t* is preserved in Hittite and Tocharian. This was later replaced by what had been the 3rd singular, namely, *\*-s*. In his 1962 book entitled *Indo-European Origins of the Celtic Verb. I: The Sigmatic Aorist*, Calvert Watkins discusses the extensive evidence from the Indo-European daughter languages for an original 3rd singular ending in *\*-s*. It was Watkins who also showed that the 3rd singular indicative was originally characterized by the fundamental ending *zero*. The *\*-n-* found in the 3rd plural was a relic of the 3rd person ending found in Tungus, Kartvelian (cf. Old Georgian *c'er-en* “they write”), and Sumerian. The development of the 3rd singular ending *\*-t* was a later change, though this still occurred fairly early since it is found in Hittite and the other Anatolian daughter languages — this *\*-t* was added to the 3rd plural ending *\*-n-* at the same time, yielding the new ending *\*-nt-*. The most recent change must have been the development of the so-called “primary” endings, which were built upon the so-called “secondary” endings by the addition of the deictic particle *\*-i* meaning “here

and now", as shown by Kerns and Schwartz in their 1972 book on Indo-European verb morphology. It may be mentioned that this deictic particle has a Nostratic origin, coming from a widely-represented proximate demonstrative stem meaning "this one here".

Proto-Uralic is assumed to have had two conjugational types (cf. Hajdú 1972: 43—44): (A) a determinative (objective) conjugation, which was characterized by the 3rd singular in *\*-s* and which was used with transitive verbs, and (B) an indeterminative (subjective) conjugation, which was characterized by the 3rd singular in *zero* and which was used with intransitive verbs. The same two conjugational types were found in Proto-Indo-European, except that they were used to contrast active versus stative. Indeed, the active-stative contrast appears to be the more ancient in both Uralic and Indo-European.

After all of the changes described above had taken place, the resulting Proto-Indo-European athematic endings were as follows (cf. Brugmann 1904:588—594; Burrow 1973:306—319; Szemerényi 1990:356—357):

Person	I. Primary		II. Secondary	
	Singular	Plural	Singular	Plural
1	<i>*-mi</i>	<i>*-me</i>	<i>*-m</i>	<i>*-me</i>
2	<i>*-si</i>	<i>*-te</i>	<i>*-s</i>	<i>*-te</i>
3	<i>*-ti</i>	<i>*-nti</i>	<i>*-t</i>	<i>*-nt</i>

Note: The 1st person plural endings have different extensions in the various daughter languages: *\*-mes(i)*, *\*-mos(i)*, *\*-men(i)*, *\*-mon(i)*.

In volume 1 (draft version 3 dated 9 March 1995), *Grammar*, of his forthcoming book *Indo-European and Its Closest Relatives: The Eurasiatic Language Family*, Greenberg discusses the evidence for a Eurasiatic first-person singular pronoun stem *\*k*. He writes:

Less widely distributed than *m* for the first-person singular is *k*. Wherever they both appear, the general contrast is *m* as ergative versus absolutive *k*, *m* as active versus middle or passive *k*, and *m* as active versus stative *k*. I am inclined to believe that this last contrast is the basic one from which the others developed. A contrast of this kind between *m* and *k* seems to be attested only in the first-person singular.

Recently, several scholars have tried to show that Indo-European is to be reconstructed as an active-stative language (for a brief discussion, cf. Schwink 1994:86—87 and 89—110). Indeed, such an interpretation seems to clarify many problems in the early dialects. According to this interpretation, the so-called "perfect" of traditional Indo-European is seen as originally stative (cf. Lehmann 1993:218). Comparison with other Nostratic languages allows us to confirm this view.

Now, the perfect had its own set of endings, one of which has hitherto defied explanation (cf. Sihler 1995:576—577, §518), namely, the first person perfect endings in *\*-k-* found, for example, in Tocharian A *tākā* "I was", Latin *fēcī* "I made", Greek *ἔθηκα* "I placed", etc. In Greek, a separate stem type developed, the so-called "κα-perfect", based upon the *-k-* endings.

This development took place in the early prehistory of Greek itself and is not representative of the Indo-European state of affairs. All indications are that the *\*-k-* endings belonged exclusively to the first person singular in Proto-Indo-European. Thus, both in function and form, the *\*-k-* endings clearly belong with the Eurasiatic first person singular pronoun stem *\*k* reconstructed by Greenberg. It should be noted that this explanation is different than that given by Greenberg, who compares the Proto-Indo-European first person perfect ending *\*-Ha* with the *\*-k-* endings found in the other Eurasiatic languages. On purely phonological grounds, I find Greenberg's proposal less convincing than the alternative suggested here.

### 5.5. Noun Morphology

According to John C. Kerns (Bomhard—Kerns 1994:172—173, §3.5.3), Proto-Nostratic may have had three nominal declensions: (A) the *first declension*, corresponding to the neuter heteroclitic declension in Indo-European; (B) the *second declension*, corresponding to the other neuter paradigms in Indo-European, and (C) the *third declension*, a variation of the second wherein a definite-accusative singular was marked by the termination *\*-m*. Kerns states that the accusative had no special marker in the first two declensional types. He also notes that the accusative singular ending *\*-m* is found in Proto-Uralic and is also widely-represented in Dravidian languages (where it has become *-n* as in Greek, for example, within Indo-European [for the full set of Proto-Dravidian case endings, see below]). Kerns reconstructs the following singular case endings for Common Uralic (cf. also Collinder 1960:282 and 1965:54—57; Hajdú 1972:41):

Nominative:	<i>*-Ø</i>
Accusative:	<i>*-m</i>
Genitive:	<i>*-n</i>
Dative-Lative:	<i>*-nʲV</i> (palatalized <i>*-n</i> followed by a front vowel)
Locative:	<i>*-na</i>
Ablative:	<i>*-ta</i> and <i>*-ða</i>

Kerns believes that the above endings, “with a few reservations”, can also be attributed to Proto-Nostratic (here, I would substitute “Proto-Eurasiatic” for “Proto-Nostratic” — Kerns himself uses “Eurasiatic” in his 1985 book).

At this point, it is interesting to compare the case endings (properly, tightly bound postpositions) reconstructed for Proto-Dravidian by Zvelebil (1977:33):

Nominative:	<i>*-Ø</i> and, possibly, <i>*-m</i> / <i>*-n</i> with non-personal substantives
Accusative:	<i>*-(V)n</i>
Genitive:	<i>*-in</i> (adnominal); <i>*-atu</i> (pronominal); <i>*-ā</i> (possessive)
Dative:	<i>*-(k)ku</i>
Instrumental:	<i>*-ān</i> / <i>*-āl</i>



Ablative:	*-in (?)
Locative:	*-u <sub>l</sub> ; *-in/*-il (?); *-kan
Sociative:	*-ōtu or *-(l)-ōtu < *tōrV (?)
(Comitative)	

This system can be derived from an earlier, simpler system, as is shown by comparison with Elamite (cf. McAlpin 1981:108—112). Clearly, several of the endings must have had a common origin (such as the genitive ending \*-in, the ablative \*-in, and the locative \*-in[/\*-il]). McAlpin (1981:111) reconstructs the following case endings for Proto-Elamo-Dravidian:

Nominative:	*-Ø
Accusative:	*-(V)n
Adessive/	*-əkkə
Purposive (Dative):	(?)
Genitives:	
1. Possessive:	*-a
2. Adnominal:	*-in
3. Oblique/	*-tə
Locative	

To fill out the picture, let us look at the case endings reconstructed for Proto-Indo-European by Szemerényi (1990:169; see also Beekes 1995:173, §13.2.2):

	Singular	Plural	Dual
Nominative:	*-s, *-Ø	*-es	} *-e, *-i/*-ī
Vocative:	*-Ø	*-es	
Accusative:	*-m/*-m̃	*-ns/*-ñs	
Genitive:	*-es/*-os/*-s	*-om/*-ōm	*-ous (?), *-ōs (?)
Ablative:	*-es/*-os/*-s; *-ed/*-od	*-bh(y)os, *-mos	*-bhyō, *-mō
Dative:	*-ei	*-bh(y)os, *-mos	*-bhyō, *-mō
Locative:	*-i	*-su	*-ou
Instrumental:	*-e/*-o; *-bhi, *-mi	*-ōis; *-bhis, *-mis	*-bhyō, *-mō

Missing from this table is the thematic nominative-accusative neuter singular ending \*-m — this form is to be derived from the accusative singular ending. The \*-bh- and \*-m- endings found in several of the concrete cases are usually considered to be late additions, and some have even questioned whether or not they should even be posited for the Indo-European parent language. They are not found in Hittite. No doubt, these endings were originally adverbs that were gradually incorporated into the case system, with some daughter languages choosing \*-bh- and

others choosing *\*-m-*. They should not be reconstructed as case endings at the Proto-Indo-European level. In like manner, the genitive plural probably arose from the accusative singular, while the genitive singular and nominative singular endings in *\*-s* must have had a common origin — these endings later spread from the genitive singular to the ablative singular. The dual was a late addition, while the plural originally had a reduced set of endings compared to what was found in the singular — this is the picture that emerges when the Hittite and other Anatolian data are brought into consideration. We may note here that the Proto-Uralic ablative ending *\*-ta* and the Proto-Elamo-Dravidian oblique/locative ending *\*-tə* are most probably related to the Indo-European ablative *\*-ed/\*-od* (the phonetics are uncertain here).

In his book *Indo-European Prehistory*, Kerns (1985:109—111) devotes considerable attention to describing an oblique-*n* marker, which he claims is a major component in Indo-European heteroclitic stems, and he elaborates upon his ideas in his treatment of Nostratic declension in Bomhard—Kerns (1994:173—179, §3.5.3.1). He notes that this oblique-*n* is the source of the *-n* found in the genitive, ablative, and instrumental case endings in Dravidian — it is also found in the genitive, dative-locative (palatalized before a front vowel), and locative case endings in Uralic. Kerns even finds traces of this oblique-*n* in Eskimo and Japanese. Thus, this is a widespread and ancient feature. Greenberg (forthcoming) also discusses this ending:

There is an *-n* genitive in Eurasiatic that frequently serves as a marker of the oblique case along with more specific indicators of location, instrument, etc. When this occurs it invariably precedes the specific indicator. In certain cases it has also spread to the nominative.

## 5.6. Vowel Gradation

The development of vowel gradation is extremely complicated and would require far more space to discuss than is allotted for in this book. Therefore, I will only deal with several key points. Ever since Hirt, it has been assumed by many scholars that early Indo-European went through a stage of development characterized by phonemic stress and that this stress caused the weakening and/or loss of the vowels of unaccented syllables, that is to say that the stress was responsible for the development of the quantitative ablaut alternations. Furthermore, according to this theory, it is assumed that, at a later date, stress became phonemically non-distinctive and was replaced by an accent system characterized by phonemic pitch and that this pitch accent was responsible for the development of the qualitative ablaut alternations. Kuryłowicz, however, argued that the qualitative ablaut alternations were ancient and preceded the changes brought about by the phonemicization of a strong stress accent. Comparison with the other Nostratic languages, especially Kartvelian, indicates that Kuryłowicz was correct. Indo-European inherited the qualitative ablaut alternations from Nostratic. In a recent paper entitled “The Prehistory of the Indo-European Vowel System in Comparative and Typological Perspective”, Greenberg (1990) supplies convincing evidence in support of this view. The phonemization of a strong stress accent in early Indo-European brought about a complete restructuring of the inherited vowel system. The same thing happened in Kartvelian, by the way. Another important point concerns the early prehistory of the *\*e ~ \*o* ablaut gradation. In an article published in

1965, Pulleyblank tried to show that this gradation series should be reinterpreted as a  $*ə$  (*schwa*)  $\sim *a$  gradation. It looks as though Pulleyblank came pretty close to the truth, though only for the oldest period of development. We may note that this older system is partially preserved in Hittite, where  $*ə$  appears as *e* (or *i*) and  $*a$  is preserved as such. The development of  $*ə$  to  $*e$  is fairly easy to explain:  $*e$  may be assumed to have been the normal allophone of  $*ə$  under stress. A typological parallel may be observed in the Northwest Caucasian languages Ubykh and Circassian, where *ə* becomes *e* under stress. For the latest period of development, namely, the period directly before the emergence of the non-Anatolian daughter languages, the traditional system of five long and short vowels is surely correct. Finally, there is little indication that Nostratic had phonemic long vowels. Therefore, long vowels may be assumed to have arisen solely in Indo-European proper.

According to Greenberg (1990), traces of an earlier system of vowel harmony can be discerned in Proto-Indo-European.

### 5.7. Indo-European Consonantism

There are internal inconsistencies in the traditional reconstruction of the Indo-European stop system that make that system highly improbable from a typological point of view — these include: (1) the low frequency of occurrence, if not total absence, of the traditional voiced labial stop  $*b$ ; (2) the fact that the traditional voiced stops ( $*b$ ,  $*d$ ,  $*g$ ,  $*g^w$ ) are only infrequently found in pronouns and inflectional affixes; (3) the unexplained root structure constraint against the cooccurrence of two voiced stops in a root; and (4) the typological problems caused by positing a three-way contrast in the series of stops of (plain) voiceless  $\sim$  (plain) voiced  $\sim$  voiced aspirated, thus (to use the dentals for illustration):  $*t$ ,  $*d$ ,  $*dh$ . In order to address these problems, Thomas Gamkrelidze and Vjačeslav Ivanov, on the one hand, and Paul Hopper, on the other, independently proposed, in 1972 and 1973 respectively, a radical reinterpretation of the Indo-European stop system. According to Gamkrelidze, Hopper, and Ivanov, the traditional plain voiced stops are to be reinterpreted as glottalized stops (that is, ejectives). Furthermore, according to the version of the theory proposed by Gamkrelidze and Ivanov, the traditional plain voiceless stops are to be reinterpreted as voiceless aspirates, while the traditional voiced aspirates are to remain unchanged. In this revised interpretation, aspiration is viewed as a phonemically redundant feature, and the phonemes in question could also be realized as allophonic variants without aspiration. (For an excellent survey of the Glottalic Theory, cf. Salmons 1993; see also Vennemann [ed.] 1989.)

As noted in Chapter 3, the system of Gamkrelidze, Hopper, and Ivanov has several clear advantages over the traditional reconstruction of the Proto-Indo-European stop system:

1. Their reinterpretation of the traditional plain voiced stops as glottalics (ejectives) makes it easy to account for the fact that the phoneme traditionally reconstructed as  $*b$  was highly marked in the system, being characterized by an extremely low frequency of occurrence (if it even existed at all). Such a low frequency distribution is extremely uncharacteristic of the

patterning of the voiced labial stop /b/ in natural languages having a voicing contrast in stops, but it is fully characteristic of the patterning of the labial ejective /p'/ (cf. Gamkrelidze 1981:605—606; Greenberg 1970:127).

2. Not only does the reinterpretation of the traditional voiced stops as ejectives easily account for the frequency distribution of these sounds, it also explains the fact that they were used only very infrequently in inflectional affixes and pronouns, since this type of patterning is characteristic of the way ejectives behave in natural languages having such sounds.
3. For the first time, the root structure constraint laws can be credibly explained. These constraints turn out to be a simple voicing agreement rule with the corollary that two glottalics cannot cooccur in a root. Hopper (1973:160) cites Hausa, Yucatec Mayan, and Quechua as examples of natural languages exhibiting a similar constraint against the cooccurrence of two glottalics. Akkadian may be added to this list as well if we take Geers' Law to be a manifestation of such a constraint (cf. Bomhard 1984:135).
4. The so-called Germanic and Armenian "consonant shifts" (in German, "Lautverschiebungen"), which can only be accounted for very awkwardly within the traditional framework (cf. Emonds 1972:108—122), turn out to be mirages. Under the revised reconstruction, these branches (perhaps along with the poorly-attested Thracian and Phrygian as well) turn out to be relic areas.

Strong support for this theory is provided by comparison of Indo-European with Kartvelian and Afroasiatic, both of which have a three-way contrast, in the series of stops and affricates, of voiceless (aspirated) ~ glottalized ~ voiced. According to my views on Nostratic, though not according to the views of Illič-Svityč and Dolgopolsky, the Indo-European glottalized stops (the traditional plain voiced stops) correspond exactly to glottalized stops in Kartvelian and Afroasiatic, while the voiceless (aspirated) stops in Indo-European correspond to identical sounds in Kartvelian and Afroasiatic, and the voiced (aspirated) stops of Indo-European correspond to voiced stops in Kartvelian and Afroasiatic (for details, see the table of sound correspondences given at the end of Chapter 4). It should be noted that the voiced aspirates were probably a late development in Indo-European, and this series may be assumed to have originally been characterized by plain voicing, without aspiration.

#### Traditional Indo-European

p	b	bh
t	d	dh
k	g	gh
k <sup>w</sup>	g <sup>w</sup>	g <sup>w</sup> h

#### Gamkrelidze and Ivanov

p <sup>[h]</sup>	p'	b <sup>[h]</sup>
t <sup>[h]</sup>	t'	d <sup>[h]</sup>
k <sup>[h]</sup>	k'	g <sup>[h]</sup>
k <sup>w</sup> [h]	k' <sup>w</sup>	g <sup>w</sup> [h]

After reviewing the arguments both for and against the Glottalic Theory, Schwink (1994:63—64) concludes (the emphasis is his):

As was noted, the Glottalic Theory spearheaded to a large extent the current debate on typology and reconstruction methodology. It incorporates well the various problems involved in using the framework. The universals involved are not absolute so that opponents invoke the few exceptions as proof that the method is fallacious. However, the number of agreements of the new interpretations with both synchronic and diachronic patterns, if not *proving* the Glottalic Theory beyond all doubts, certainly put it high in probability. Of course, those opponents of the Glottalic Theory who follow a formulaic approach to the process of reconstruction in general are in a different business from the followers of the Theory who are attempting to capture some measure of realism.



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## The Nostratic Homeland and the Dispersal of the Nostratic Languages

### 6.1. Overview

Here, we run into potentially serious problems, for we must turn to other disciplines such as archeology. Archeological data provide the raw material from which archeologists construct theories about the past. The problem is that the raw material is hardly ever complete, but rather it is limited by what has happened to survive, usually products of manual skill and craftsmanship. This means that the theories derived from the controlled analysis of the raw material involve a good deal of interpretation on the part of the observer — one's view of the past will be directly conditioned to a greater or lesser degree by the theoretical framework within which one operates as well as by one's prejudices in addition to the type of evidence employed. (To complicate matters, many of these same problems occur in the field of Linguistics [cf. Labov 1994:10—11].) Moreover, when dealing with pre-literate cultures, there is seldom a clear-cut correlation between linguistic groups and culture, and cultural spread does not always mean language spread, even when migration of people takes place — individuals or small groups of individuals moving peacefully to a new territory may simply be assimilated into the dominant population group. One could cite the example of the many ancient Greek trading colonies established on the shores of the Mediterranean and Black Seas, which were eventually absorbed into the surrounding communities. On the other hand, language spread can occur with a relatively small migration of people when the language belongs to conquerors or to those bearing a more technologically advanced culture — both these factors were involved, for example, in the spread of Latin to the Iberian Peninsula, Gaul, and Dacia, where modern-day Romance languages are found, nearly all of the indigenous languages existing at the time of the Roman conquest having been replaced (Basque is an exception). Another example would be the spread of Turkic languages across Central Asia, mostly replacing the Iranian languages that were spoken there at the time of the appearance of the Turkic tribes (Tajik [also called Tadzhik] is an exception). It goes without saying that written records, when combined with the surviving relics of material culture, give a much broader view of earlier communities and reduce the need for speculation/interpretation. Even when no written records exist, however, the analysis of the lexicon of a reconstructed proto-language can give a clue to the material culture of the speakers of that language — this endeavor is referred to as “linguistic paleontology” or “paleolinguistics”.

The question of where the probable homeland of the Nostratic proto-language is to be located is directly related to the locations of the homelands of each of the daughter languages. Since there is a fair amount of controversy surrounding this subject, it is necessary to survey

current theories and to select the scenarios that seem most likely in view of linguistic, archeological, and anthropological evidence, while mindful of the problems expressed in the preceding paragraph. Let us look at each of the daughter languages in turn.

## 6.2. Indo-European

At the present time, there are two main competing theories regarding the Indo-European homeland: (1) according to the first theory, championed by the late Marija Gimbutas and a large number of supporters, the Indo-European homeland was located to the north of and between the Black and Caspian Seas and has been broadly identified with the “Kurgan Culture”; (2) another view, made popular by Colin Renfrew, would place the Indo-European homeland in Anatolia — similar views were put forth by Gamkrelidze—Ivanov in the second volume of their massive 1984 work (in English translation) *Indo-European and the Indo-Europeans: A Reconstruction and Historical Typological Analysis of a Protolanguage and a Proto-Culture* (an English translation of this work has just been published), by Krantz (1988), and by Dolgopolsky (1988). Renfrew tries to link the spread of Indo-European languages in Europe with the spread of agriculture. According to Gimbutas, the period of Indo-European unity is to be placed at around 4,500 BCE, while Renfrew would place the date considerably earlier at around 7,000 BCE.

The following objections may be raised against the theory of an Anatolian homeland for Indo-European:

1. There are no unambiguous references to Indo-Europeans in written records from the ancient Near East until just before 2,000 BCE, and the first references are to Hittites. Moreover, the Hittites were most definitely invaders (cf. Gamkrelidze 1970; Mellaart 1981; Puhvel 1994; Steiner 1990) who imposed themselves on populations speaking Caucasian languages — it is generally agreed that Hittite replaced Hattic, which is thought to be a Caucasian language (cf. Diakonoff 1990:63). Another language widely-spoken in Anatolia at the time that the Hittite texts were composed was Hurrian, which, along with the later and closely-related Urartean, has been convincingly shown by Diakonoff and Starostin (1986) to be a Northeast Caucasian language. Thus, it appears that the earliest inhabitants of Anatolia were speakers of Caucasian languages and that the Indo-Europeans were intrusive — Diakonoff (1990:62—63) places the Hurro-Urartean language in eastern Anatolia at least as far back as the third millennium BCE. Furthermore, attempts to equate other groups (Gutians, for example) referred to in cuneiform texts with Indo-Europeans are based upon such scanty evidence as to be meaningless (Diakonoff [1990:63] claims that the Gutians [Qutians] were Caucasian).
2. An Anatolian homeland for Indo-European makes it difficult to account for the extensive evidence for contact between Indo-European and Uralic (cf. Haarmann 1994; Joki 1973).
3. Anthony (1991:198—201) argues that the linguistic evidence confirms the existence of four-wheeled vehicles among the Indo-Europeans. Archeological evidence indicates that four-wheeled vehicles appeared in Europe no earlier than 3,300 - 3,100 BCE. The correlation of



the linguistic and archeological evidence brought forth by Anthony rules out a date for Indo-European unity as early as that proposed by Renfrew and suggests that “the PIE language community remained relatively intact until at least 3,300 BC”. Moreover, the association of the Indo-Europeans with the domestication of horses and with the development of four-wheeled vehicles definitely points to a North Pontic/Steppe homeland as opposed to an Anatolian homeland. I will have more to say about this below.

The literature supporting a North Pontic/Steppe homeland for Indo-European is extensive and begins as far back as 1926 with the publication of V. Gordon Childe’s book *The Aryans: A Study of Indo-European Origins*. Rather than presenting all of the arguments and evidence, I will summarize my own views. For detailed information on the theory of a North Pontic/Steppe homeland, Mallory’s 1989 book *In Search of the Indo-Europeans: Language, Archaeology and Myth* should be consulted as should the 1990 volume co-edited by Thomas Markey and John A. C. Greppin entitled *When Worlds Collide: Indo-European and Pre-Indo-Europeans. The Bellagio Papers* and the 1987 volume honoring Marija Gimbutas co-edited by Susan Skomal and Edgar Polomé entitled *Proto-Indo-European: The Archaeology of a Linguistic Problem. Studies in Honor of Marija Gimbutas*. Finally, many notable articles on the subject have appeared in issues of the *Journal of Indo-European Studies*, including numerous articles by Marija Gimbutas herself, as well as in *Current Anthropology*, to name two of the more important journals.

In an unpublished paper of major significance, Johanna Nichols (1993) has argued that the earliest Indo-European speech community (“Pre-Indo-European”) was located in Central Asia. She proposes that Pre-Indo-European spread westward across the steppes, eventually arriving on the northeastern shores of the Black Sea. I support this scenario. I would place the Pre-Indo-Europeans in Central Asia at about 7,000 BCE, and I would date the arrival of the Pre-Indo-Europeans in the vicinity of the Black Sea at about 5,000 BCE. Though it is not known what language or languages were spoken in the area before the arrival of Indo-European-speaking people, it is known that the Pre-Indo-Europeans were not the first inhabitants of the area. According to Kořko (1991:252), archeological evidence points to cultural influence spreading from the Caucasian-Pontic zone to the area of the Vistula-Oder in the earliest Neolithic (around 7,000 BCE). The direction of influence was subsequently reversed, and there appears to have been a movement of people from west to east into the Pontic area. I would equate this reversal with the arrival of the Pre-Indo-Europeans. I will venture a guess that when the Pre-Indo-Europeans arrived on the shores of the Black Sea, they encountered and occupied territory formerly inhabited by Caucasian-speaking people. This disrupted the pre-existing cultural link between the Caucasian-Pontic zone and the Vistula-Oder area and resulted in a displacement of Caucasian languages southward toward the Caucasus Mountains. That there was contact between Indo-Europeans and Caucasians is supported by a number of shared vocabulary items between Indo-European and Northwest Caucasian. Among these are (this is but a small sampling; I have taken the Northwest Caucasian examples exclusively from Kuiper’s *A Dictionary of Proto-Circassian Roots* — it is the only work available to me. Now, I realize full well that Circassian is but one branch of Northwest Caucasian. Therefore adjustments may have to be made to the comparisons I am proposing on the basis of evidence from the remaining

branches of Northwest Caucasian) (the Proto-Indo-European reconstructions are in accordance with Gamkrelidze—Ivanov's system):

1. Proto-Circassian \**q'otha* "to tell, to report; to announce, to make known" ~ Proto-Indo-European \**k'wet[h]/\*k'wot[h]*- "to say, to speak, to call" (cf. Pokorny 1959:480—481 \**g<sup>h</sup>et-* "to talk": Gothic *qipan* "to say"; Old English *cweþan* "to say, to speak"; Armenian *kočem* "to call, to name").
2. Proto-Circassian \**wasa* "price" ~ Proto-Indo-European \**wes-no-m* "price" (cf. Pokorny 1959:1173 \**ues-* "to buy, to sell", \**ues-no-* "price": Sanskrit *vasná-m* "price, value"; Latin *vēnum* "sale"; Greek ὄνοϛ [< \**wós-no-s*] "price").
3. Proto-Circassian \**warda* "high-born" ~ Proto-Indo-European (adj.) \**word[h]/-o-s* "grown, full-grown, tall, upright", (adj.) \**wrd[h]/-o-s* "raised, upright, tall", (stem) \**werd[h]/-word[h]/\*wrd[h]*- "to raise, to elevate; to grow, to increase" (cf. Pokorny 1959:1167 \**uerdh-*, \**yredh-* "to grow": Sanskrit *várdha-h* "increasing, growing, thriving", *vṛddhá-h* "grown, become larger or longer or stronger, increased, augmented, great, large", *vṛddhi-h* "growth, increase, augmentation, rise, advancement").
4. Proto-Circassian \**wala* "cloud" ~ Proto-Indo-European \**wel-/wol-/w]*- "to moisten, to wet, to flow": (extended forms) \**wel-k[h]/\*wol-k[h]/\*w]*-k[h]-, \**wel-g[h]/\*wol-g[h]/\*w]*-g[h]-, \**wel-k'-/wol-k'-/w]*-k'- "to wet, to moisten" (cf. Pokorny 1959:1145—1146 \**uelk-*, \**uelg-* "wet, moist": Old English *weolcen*, *wolcen* "cloud"; German *Wolke* "cloud").
5. Proto-Circassian \**nəba* "belly" (note here Temirgoy *nəbəž'əlbənzə* "navel"; Ubykh *nəbəž'* "navel") ~ Proto-Indo-European (\**neb[h]/-nob[h]*- "navel" (cf. Pokorny 1959:314—315 (\**enebh-*), \**embh-*, \**ombh-*, \**nōbh-*, (\**nēbh-* ?), \**ṃbh-* "navel": Sanskrit *nābhi-h* "navel"; Old High German *naba* "nave, hub (of a wheel)"; Old Prussian *nabis* "navel").
6. Proto-Circassian \**ban(a)* "to fight" ~ Proto-Indo-European \**b[h]en-* "to slay, to wound" (cf. Pokorny 1959:126 \**bhen-* "to slay, to wound": Gothic *banja* "strike, blow, wound"; Old High German *bano* "death, destruction").
7. Proto-Circassian \**malə* "sheep" ~ Proto-Indo-European \**mel-* "wool, woolen garment" (cf. Pokorny 1959:721 \**mel-* "wool, woolen garment": Greek μαλλός "a lock of wool, wool").
8. Proto-Circassian \**hawa* "but" ~ Proto-Indo-European \**hew-* [\**haw-*] "that, other" (cf. Pokorny 1959:73—75 \**au-*, \**u-* pronoun stem: "that, other": Gothic *auk* "but, also"; Latin *au-tem* "but, on the other hand").

9. Proto-Circassian \*p:əyə “enemy” ~ Proto-Indo-European \*p[h]ǵ(y/i)- “to hurt, to harm, to attack” (cf. Pokorny 1959:792—793 \*pē(i)- “to hurt”: Gothic *fjands* “enemy”; Old English *fēonds* “enemy”).
10. Proto-Circassian \*k'anə “knucklebone (used in bone game)” ~ Proto-Indo-European \*k'enu- “knee, joint, angle” (cf. Pokorny 1959:380—381 \*ǵenu-, \*ǵneu- “knee”: Sanskrit *jānu* “knee”; Latin *genū* “knee, knot, joint”; Greek γόνυ “knee, joint”; Gothic *kniu* “knee”).
11. Proto-Circassian \*k'asa “to go out (as fire, light); to escape, to run away, to desert, to elope” ~ Proto-Indo-European \*k'wes- “to extinguish” (cf. Pokorny 1959:479—480 \*gʷes-, \*zǵʷes- “to extinguish”: Lithuanian *gèsti* “to go out, to die out, to become dim”).
12. Proto-Circassian \*sama “heap” ~ Proto-Indo-European \*sem-/som- “together, together with; one” (originally “to gather together”) (cf. Pokorny 1959:902—905 \*sem- “one; together”: Sanskrit *sa* [< \*sm-] “with, together with, along with”, *sám* “with, together with, along with, together, altogether”, *sa-trā́* “together, together with”, *sámana-h* “meeting, assembly, amorous union, embrace”, *samūbhá-h* “heap, collection”).
13. Proto-Circassian \*gəya “smooth (of ice)” ~ Proto-Indo-European \*g[h]ey- “snow, ice, winter” (cf. Pokorny 1959:425—426 \*ǵhei-, \*ǵhi- “winter, snow”: Sanskrit *himá-h* “snow, frost, hoar-frost, winter”, *hemantá-h* “winter, the cold season”; Greek χιών “snow; snow-water, ice-cold water”, χειμα “winter-weather, cold, frost”, χειμών “winter; wintry weather, a winter storm”).

The Armenian linguist Gevork B. Djahukyan (1967) has devoted a book entitled (in English translation) *Interrelations of the Indo-European, Hurrian-Urartean, and Caucasian Languages* to exploring lexical parallels between Indo-European and Caucasian languages. Though dated, this book can still be used with profit, especially for its bibliography.

Thus, it was the area to the north of and between the Black and Caspian Seas that was most likely the final homeland of a unified Indo-European parent language. By 3,500 BCE, Indo-European had begun to split up into different dialect groups, and Indo-European speaking-people had started to spread westward into Central Europe and southward into the Balkans (cf. Anthony 1991; Nichols 1993:23—26, §3.5). Gimbutas (1973) suggests similar dating and identifies the spread of Bronze Age metallurgical technology with the Indo-Europeanization of Europe. The Indo-European homeland is shown in Map 1, and the dispersal of the Indo-European languages is shown in Map 2.

### 6.3. Afroasiatic

So much controversy surrounds the subject of the homeland of Afroasiatic that none of the proposals advanced to date can be considered definitive. Diakonoff (1988:23—25) presents a

summary of several of the proposals — his own view is that Afroasiatic (his “Afrasian”) was located in the “South-Eastern Sahara (say, between Tibesti and Darfur)”. Another hypothesis has been advanced by Yuri Militarëv. According to Militarëv, the original Afroasiatic homeland was in the Middle East and the Arabian peninsula (cf. Diakonoff 1988:24). Diakonoff (1988:32, fn. 14) further clarifies Militarëv’s views:

A more precise identification was proposed by Militarev and sustained from the archaeological and historical side by V. Shnirelman. In their opinion, the Proto-Afrasian speakers were the Natufians of the well-known early Neolithic culture of the Palestinian-Syrian area.

In my opinion, Militarëv’s proposals have great merit. Henry (1992:182—184) notes that “Natufian assemblages are remarkably well-dated because of multiple lines of evidence tied to radiocarbon dates, stratigraphic successions, and artifact seriation”. Henry dates the earliest Natufian finds to 10,900 BCE and the latest to 7,800 BCE (he actually says [1992:184] “as early as about 12,900 years ago to as late as about 9,800 years ago”). The earlier date agrees extremely well with the date assigned to the Afroasiatic parent language (approximately 10,000 BCE [that is, 12,000 years ago] according to Diakonoff [1988:33, fn. 15]). The following scenario may be proposed: Afroasiatic is sufficiently different from other Nostratic languages to suggest that it was the first branch to split off from the rest of the Nostratic speech community — some have even suggested that Proto-Afroasiatic might be a sister language to Proto-Nostratic rather than a daughter language. Proto-Afroasiatic may be dated at roughly 10,000 BCE (though a little earlier is also possible), and the Afroasiatic homeland may be placed in the Middle East in an area bordering the eastern shores of the Mediterranean Sea, stretching from modern-day Syria through Lebanon and south into Israel (that is, the Levant) — if Militarëv and Shnirelman are correct, the Natufian cultural complex may be identified with the Afroasiatic parent language. By 8,000 BCE, Afroasiatic had begun to split up into various dialect groups and had spread southward into the Arabian peninsula and southwestward across the Sinai peninsula into northern Africa. A northern and eastern spread followed the fertile crescent, initially as far as northern and eastern Syria — it was this dialect group that eventually developed into Proto-Semitic, which Diakonoff (1988:25) dates to the 6th-5th millennia BCE. Further spread took Afroasiatic languages southward down through the Arabian Peninsula, across the Bab el Mandeb, and into the Horn of Africa, westward across northern Africa, and then southward across the Sahara Desert into what is today the area bordering northern and northeastern Nigeria around Lake Chad. See also Renfrew (1992:472) and Cavalli-Sforza et al. (1994:171—174) on the spread of Afroasiatic languages. Map 3 shows the distribution of the Afroasiatic languages at about 500 BCE (this is adapted from Cohen [ed.] 1988:viii).

Archeological remains in the Levant (Syria-Lebanon-Israel coast and slightly inland) go back to Paleolithic times. The Levant is made up of a combination of mountains, plains, valleys, and coastal lowlands cramped into a rather small geographical area. There is plentiful evidence from Mesolithic hunter-gatherer societies. The earliest Neolithic settlements (such as Jericho, which is still inhabited) date to at least 9,000 BCE. Several noteworthy, partially sequential, partially overlapping Neolithic cultural complexes have been identified, namely, the Mushabian, the Geometric Kebaran, and the Natufian (for details, cf. Henry 1992). The dating for these is as

follows: Mushabian: between 14,170 B.P. and 11,700 B.P. (Henry 1992:125); Geometric Kebaran: between 14,330 B.P. and 12,610 B.P. (Henry 1992:155); Natufian between 12,500 and 10,500 B.P. (Henry 1992:182 — earlier dates are given in Cavalli-Sforza et al. 1994:214). It is the Natufians who are associated with the development of agriculture. Neolithic remains from the Levant are dated well into the 5th millennium BCE. Apparently, the topography of the Levant did not favor the establishment of large, unified states, since the archeological record points to numerous, autonomous or semi-autonomous city-states instead — by the 3rd millennium BCE, there were many such city-states. The Levant stood at the cross-roads between the mighty empires in Egypt and Mesopotamia — it was an area made rich by trade, an area coveted by competing neighbors, an area with a rich and varied literature, an area that gave birth to great religions, and an area with a long and colorful history. The archeological data from the Levant are extremely rich and have been fairly intensively studied and dated, though it will still take ages to sift through it all.

The topography of Mesopotamia is varied: the east is bounded by the Zagros mountains and the Iranian Plateau, the center is dominated by the plains surrounding the Tigris and Euphrates Rivers, the south is dominated by alluvial plains, and the west is semi-arid / desert. Several major shifts in climatic conditions have taken place over the past 15,000 years. Permanent settlements associated with agriculture and stock herding date as far back as 8,000 BCE. At this period, settlements were relatively small. By 6,000 BCE, agriculture was well-established, and larger villages appeared. Slightly later, major cultural centers (such as Eridu) emerge, trade flourishes, and wealth and population increase. Pictographic writing begins to appear at around 3,500 BCE, and this slowly develops into the cuneiform syllabary. The earliest recorded language was Sumerian — the Sumerians were located in central and southern Mesopotamia. Semitic people were located in the immediate north and west. The earliest recorded Semitic language was Akkadian. Further north, in modern-day Turkey, Caucasian languages were spoken. There were also several languages of unknown affiliation (such as Kassitic). References: Diakonoff 1988; Henry 1992; Nissen 1988.

Another scenario, proposed by Martin Bernal, associates the final disintegration of the Afroasiatic parent language with the Khartoum Mesolithic and locates the latest Afroasiatic homeland in modern-day Sudan. Bernal (1980:4) notes that “archeological evidence from the Maghreb, the Sudan, and east Africa [makes it seem] permissible to postulate that at least three branches of Afroasiatic existed by the eighth millennium [BCE]”. Thus, he (1980:13) dates the breakup of Proto-Afroasiatic to no later than about 8,000 BCE, after which there was a rapid expansion outward in all directions.

Bernal (1980:17) further notes that “[t]he earliest evidence of the Khartoum Mesolithic comes from the East African Rift Valley in Kenya and Ethiopia”. The precursor of the Khartoum Mesolithic seems to have been the Kenya Capsian culture, which began as far back as 20,000 years ago. This implies that the earliest homeland of Pre-Proto-Afroasiatic is to be sought in Ethiopia, and Bernal (1980:46—59) proposes just such a scenario.

The implications of Bernal’s views are enormous. Though his views are highly speculative, they are by no means implausible. Should they turn out to be true, it would give substantial weight to the arguments that Afroasiatic is to be viewed as a sister language to Proto-Nostratic rather than a descendant.

#### 6.4. Kartvelian

At the present time, the Kartvelian (also called “South Caucasian”) languages are located in the Republic of Georgia, except for Laz, which is spoken in Lazistan, Turkey. Georgian has the most speakers, while Svan is the most conservative. As is to be expected by its more archaic nature, Svan was the first language to split from the rest of the Kartvelian speech community (Georgian, Mingrelian, and Laz). According to Gamkrelidze—Mačavariani (1982:23—24), Klimov, using glottochronology, has dated this split at 2,000 BCE. The next split was between Georgian and Laz-Mingrelian (together called “Zan”), which has been dated at 800 BCE. This chronology would mean positing a rather shallow time depth for Proto-Kartvelian, in vicinity of 4,000—3,000 BCE. However, in view of the apparent contacts between Proto-Kartvelian and Proto-Indo-European (cf. Gamkrelidze 1966, 1967, and 1970:141), Proto-Kartvelian must have been roughly contemporaneous with Proto-Indo-European, which would imply a slightly earlier date. Therefore, I very hesitatingly suggest a date of around 5,000 BCE for Proto-Kartvelian. It is certain, at the very least, that Kartvelians were in their current location by that date.

Gamkrelidze—Ivanov (1995:777, fn. 19) discuss the questions of the Kartvelian homeland and the dating of the proto-language in detail:

Proto-Kartvelian (South Caucasian) dates to the fourth to the third millennia B.C. Glottochronological evidence puts the beginning of its differentiation in the very early second millennium B.C. (and possibly much earlier), at which time Svan separated out and Proto-Kartvelian divided into two separate areas, Svan and Georgian-Zan, the latter subsequently splitting into Georgian and Zan (or Colchidian)...

Proto-Kartvelian prior to its breakup must be placed, on the evidence of archaic lexical and toponymic data, in the mountainous regions of the western and central part of the Little Caucasus (the Transcaucasian foothills). The first wave of Kartvelian migrations to the west and northwest, in the direction of the Colchidian plains, must have begun with one of the western dialects in the third millennium B.C. and led to the formation of Svan, which spread to the western Transcaucasus and was superimposed on local languages, probably of the Northwest Caucasian type, which thus became substratal to Svan. Svan was gradually displaced to the north, to the Great Caucasus range, by the next wave of migrations, which occurred approximately nine centuries later (on glottochronological evidence) and removed the westernmost remaining dialect as far as the Black Sea coast. This western dialect gave rise to the later Colchidian — or Zan, or Mingrelian-Laz — language, one of the languages of ancient Colchis.

The dialects which remained in the ancient Kartvelian homeland underlie Georgian. In historical times, speakers of Georgian spread to the west, to part of the Colchidian territory, splitting the Colchidian language into two dialects and setting up the development of Mingrelian and Laz (Chan) into independent languages. They also spread to the north and northeast, displacing languages of the Northeast Caucasian type.

These Kartvelian migrations triggered the breakup of Proto-Kartvelian and the expansion of its dialects beyond the original territory.

Nichols (1993:47—51, §6.2) speculates that Pre-Kartvelian originated in Central Asia, near Pre-Indo-European, and that it spread westward along a southern route below the Caspian Sea, eventually reaching its present location, where it stayed.

### 6.5. Uralic-Yukaghir

There is general agreement about the homeland of Uralic — Décsy (1990:9), for example, places the Uralic proto-language “in the Forest-Zone-Steppe-Border (mainly north of it) between the Volga Bend in Eastern Russia and the Ob River in Western Siberia” (see also Hajdú [1972:17—23] for a discussion of the Uralic homeland and [1975:30—40] for both Uralic and Finno-Ugrian; see also Collinder [1965:28—30]).

The date at which the unified Uralic parent language is thought to have been spoken is usually given as approximately 4,000 BCE, while bringing in Yukaghir pushes that date back another millennium or so and moves the homeland slightly to the east. Nichols (1993:38, §5.1, and 47—51, §6.2) also sees Pre-Uralic as having spread westward and northward from Central Asia, slightly just ahead of the westward movement of Pre-Indo-European. Pre-Uralic took a more northerly route, while Pre-Indo-European took a more southerly route directly across the steppes.

A number of scholars have claimed that Indo-European and Uralic are more closely related to each other than either of them is to any other language or language family, while others have claimed that Uralic and Altaic are particularly close, even going so far as to set up a Ural-Altaic language family. The Ural-Altaic hypothesis is generally no longer supported by specialists in the field. The Indo-Uralic hypothesis, however, may indeed have some validity. I would very, very tentatively set up an Indo-Uralic subbranch within Eurasiatic, suggest that Indo-Uralic be located in Central Asia not far from the Aral Sea, and place the date of Indo-Uralic at around 7,000 BCE. This is definitely an area that requires additional research. We will close by citing Collinder's (1965:29—30) tantalizing remarks:

As we shall see later, Uralic and Indo-European seem to have several words in common. If these words were borrowed from Common Indo-European, the speakers of Common Uralic must have been the neighbors of the speakers of Common Indo-European. If we account for them by assuming that Uralic and Indo-European are interrelated, we arrive at the conclusion that the Uralians and the Indo-Europeans once had a common *Urheimat*. Both alternatives imply that the Indo-Europeans lived to the north of the Black Sea, and the Uralians lived to the north of them.

### 6.6. Elamo-Dravidian

Proto-Dravidian may be dated at approximately 5,000 BCE — Zvelebil (1970:18), for instance, notes that by 4,000 BCE, Dravidian had already started to break up into different dialect groups, Brahui being the first group to split off from the main speech community (note: the dates proposed by Pejros—Shnirelman [1988] are far too shallow [for example, they place Proto-Elamo-Dravidian at the 5th-4th millennia BCE], considering that Elamite is already attested as a separate language in written records [so-called “Proto-Elamite” — assumed to be Elamite but as yet undeciphered] as early as the Jemdet Nasr period, that is, around 3,000 BCE [cf. Reiner 1969:56], though it is not until considerably later, after the adoption of cuneiform by the Elamites, that abundant records begin to appear [the earliest document in cuneiform is the so-

called “Treaty of Nārām-Sin”, which is dated at just before 2,200 BCE)). At the present time, the overwhelming majority of Dravidian languages are located in the southern half of the Indian subcontinent and in the northern part of Sri Lanka, though a few outliers are found to the northwest and northeast of the main body of Dravidian languages — Brahui, for instance, is spoken in the Qalat, Hairpur, and Hyderabad districts of Pakistan (plus a smaller number of speakers in Iran and southern Afghanistan), while Kurux is spoken in the districts of Bihar, Orissa, and Madhya Pradesh, and Malto near the borders of Bihar and West Bengal (cf. Zvelebil 1970:15—18; Ruhlen 1987:136—137). We may note in passing that the inscriptions of the Indus Valley (Harappan) Civilization may have been written in an early Dravidian language (cf. Fairservis 1992:14—23 and Parpola 1994; but see also Zide—Zvelebil [eds.] 1976 for a critical assessment of earlier Soviet attempts to decipher the Indus Valley script).

David McAlpin (1981) has presented convincing evidence for a genetic relationship between Elamite and Dravidian, and the majority of scholars now accept this view (though there are still some holdouts!). I will suggest a date of 8,000 BCE for Proto-Elamo-Dravidian, though a bit later (say, 7,000 BCE) is also possible. Elamite, which is now extinct, was located primarily in southwestern Iran, in the vicinity of the Zagros mountains as well as the adjacent plains of Khuzistan and to the south along the coast of the Persian Gulf. There is good reason to believe that Elamite once occupied nearly all of the Iranian plateau.

Pejros—Shnirelman (1988) accept the Elamo-Dravidian hypothesis. They argue for a “western origin” of the Dravidian languages “somewhere in the Middle East”. After the disintegration of Proto-Elamo-Dravidian, “the Dravidian languages could begin to spread eastwards to South Asia”. Though, as noted above, their dating is questionable, the scenario they propose for the spread of Dravidian languages into India is plausible. Thus, the Elamo-Dravidian homeland may be placed roughly in western and central modern-day Iran at about 8,000 BCE. Elamo-Dravidian gradually spread eastward covering all of the Iranian plateau and extending into modern-day Pakistan and northwestern India. There was then an east-west split, with Proto-Elamite developing in the western area and Proto-Dravidian developing in the eastern area. Thus, the Dravidian homeland may be placed in Pakistan and northwestern India and dated at about 5,000 BCE, from which Dravidian languages spread southward into India proper. The invasion of Indo-Aryans (occurring in several phases during the period of about 1,700-1,400 BCE [cf. Burrow 1973:30—34]) drove the Dravidians further south and severed the geographical links between Brahui, Kurux, and Malto and the main body of Dravidian languages. Similar views are expressed by Cavalli-Sforza et al. 1994:221—222.

Pejros—Shnirelman (1988) correlate the movement of the Dravidian languages into India with archeological evidence of the Neolithic and Chalcolithic. After surveying faunal and floral terminology in Central-Southern Dravidian languages, they discuss agricultural and stock-raising terminology. This combined evidence confirms a high level of agriculture in West-Central India by about 2,000 BCE. They associate this area and culture with the homeland of Central-Southern Dravidian. This is the region from which Central-Southern Dravidian languages spread eastward and southward. They also note that the archeological evidence as well as linguistic reconstructions indicate that arable farming was widespread in the western South Asian regions already by the late third millennium BCE and that both the “Harappans and the Chalcolithic



inhabitants of Central India and Maharashtra kept goats, sheep, humped cattle, buffaloes, pigs, and dogs”.

Neolithic settlements in Iran (Tepe Ganj Dareh, for example) have been dated to before 7,000 BCE. The dwellings from this period were constructed of sun-dried mud bricks, and the inhabitants herded goats and produced lightly-fired pottery. In the 5th and 4th millennia BCE, the settlements had grown to large towns — Susa had already been established (Susa was the capital of Elam). At that time, the western part of Iran was under the influence of the Ubaid and Uruk cultures of Mesopotamia. Though it is probably safe to say that an early form of Elamite was the language of western and southern Iran (and most likely well to the east) by this time, Caucasian languages were spoken in the northwest of Iran on into modern-day Turkey (as evidenced by the later Hurrian and Urartean). By the 3rd millennium BCE, there were several Bronze Age cultures in Iran. In the west and south, the Elamite kingdom had been established — it lasted until it was destroyed by the Assyrians in 640 BCE. As noted above, the earliest “Proto-Elamite” inscriptions date to this period. To the north of Elam, in what is currently central and western Iran, the Giyan culture was flourishing — it lasted nearly a thousand years. Another noteworthy cultural center (at sites such as Sharh-i Sokhte and Tepe Yahya) existed in southeastern Iran, not far from the Indus Valley (Harappan) Civilization. In the middle of the 2nd millennium BCE, Persian tribes began invading from the northeast, and, by 1,200 BCE, they had conquered nearly all of Iran.

The India-Pakistan cultural area is enormous and has always been heterogeneous — even at present there is tremendous variety. In the 3rd millennium, Baluchistan and northwestern India were part of the vast Mesopotamian-Iranian-Indus Valley cultural complex. Copper-working agriculturalists were living in well-built villages. Trade routes were thriving. By 2,500 BCE, the Indus Valley (Harappan) Civilization was well-established — it extended over most of Baluchistan, north well into Punjab, and south as far as the Gulf of Cambay. Indo-Aryan tribes began invading from the northwest at about 1,700 BCE. Given the geography, claims that the Indus Valley inscriptions were written in an early form of Dravidian are likely to be true. Reference: Dani—Masson (eds.) 1992.

## 6.7. Altaic

At the present time, Altaic languages cover an enormous territory, beginning with Turkey in the west; stretching eastward across the Russian Federation and the republics of Central Asia in the middle and across nearly all of northern Siberia; encompassing all of Mongolia, parts of northern, northwestern (Xinjiang) and northeastern China (Manchuria); reaching down into the Korean peninsula; and ending far to the east in Japan. The spread of Turkic and Mongolian languages across vast stretches of Eurasia has occurred within the past two millennia — the first westward forays of Altaic tribes began with the Huns, going as far back as Roman times (Nichols [1993] gives a good overview of the spread of Turkic and Mongolian languages; see also Menges 1968:16—53). (Manchu-)Tungus languages were once more widely spoken but have lost considerable ground fairly recently.

In the middle of the first millennium BCE, Turkic tribes were concentrated in the vicinity of modern-day Mongolia and just to the north, while Mongolian tribes were immediate neighbors to the east, south, and southeast. Tungus tribes were to the north and northeast. Indo-European languages covered most of Central Asia (Iranian) and parts of Xinjiang (Tocharian). To the extreme northeast were Chukchi-Kamchatkan peoples. Prior to their expansion westward, Altaic-speaking people had lived for millennia in the area delimited above in small pastoral nomadic tribes, apparently freely intermingling with one another.

Menges (1968:56—57) specifies the original geographical distribution of the Altaic languages as follows:

Not discussing here the position of Korean, and not including it in the Altaic group of languages proper, this group originally comprised four large families:

I. Hunnic, originally in the southwest and south of the Altaic area, although we know so little about it that we include it in Altaic mainly because it apparently survives in Volga-Bulgarian and present-day Távaš;

II. Turkic, originally in the northwest and west;

III. Mongolian, in the center and southeast; and

IV. Tungus, in the north and northeast.

Of all of these, Turkic represents the most recent evolutionary type, while Mongolian, though more archaic than Turkic, nevertheless shows a more recent type of development than does Tungus, which is the most archaic type of Altaic, and thus serves as an excellent “time-table” for relative evolutionary age in Altaic.

For the times prior to the separation and differentiation from the primordial nucleus groups of Altaic, which were later to become the four Altaic divisions mentioned above, a habitat must be assumed which probably comprised all of the Central Asiatic steppes, so that the term “Altaic” languages is actually justified, since it designates that group of languages spoken around the Altaj Mountains, in a wider sense of the term, in this case on the steppes extending to the south around the Altaj...

## 6.8. Others

1. Sumerian, which is now extinct, was spoken in southern Mesopotamia (modern-day Iraq), extending from Babylon in its northernmost limits to the tip of the Persian Gulf in the south. From the time of the earliest texts, several dialects can be distinguished, the most important of which was Emesal, most probably “women’s speech”, which Boisson (1992:434—435) argues was more conservative than the main dialect, Emegir. The earliest Sumerian inscriptions date from around 3,100 BCE, though the oldest intelligible texts date from about 2,600 BCE, and the language was probably still spoken as late as the 3rd century BCE. The Sumerian writing system was based exclusively on the cuneiform syllabary, which exhibits several marked stages of development over the course of Sumerian literary history. After about 1,900 BCE, Akkadian (a Semitic language) began to replace Sumerian in letters and administrative texts, though Sumerian continued to be used in cultic and literary texts.
2. The Chukchi-Kamchatkan family includes the following languages: Chukchi, Koryak, Kerek, Alyutor, and Kamchadal (also called Itelmen or Itelmic). Koryak, Kerek, and Alyutor

are extremely close as a group, and these, in turn, are close to Chukchi. Kamchadal, which is now on the verge of extinction, stands apart from the others. The Chukchi-Kamchatkan languages are found in the extreme northeast corner of Siberia in the Chukotka and Kamchatka peninsulas. Though written languages were developed for Chukchi, Koryak, and Kamchadal in the 1930's, only Chukchi is still being used in publications and education.

3. Gilyak (also called Nivkh) is usually considered to be a single language, but the two main dialects, namely, the Amur dialect, on the one hand, and the Sakhalin (or Eastern) dialect, on the other, are not mutually intelligible. Of the two, the Sakhalin dialect is the more archaic. The Gilyaks are found on the lower reaches of the Amur River and on Sakhalin Island. Though a written language was developed for the Amur dialect in the 1930's, next to nothing has appeared in it.
4. As the name implies, Eskimo-Aleut has two branches: Eskimo and Aleut. The Aleut dialects are mutually intelligible. However, this is not the case with the Eskimo dialects. Two main Eskimo dialect groups are distinguished, namely, Yupik and Inuit (also called Inupiaq). Yupik speakers are concentrated in southwestern Alaska, beginning at Norton Sound and extending southward along the western and southern coasts and inland. An extremely small enclave of Yupik speakers is found in northeastern Siberia as well — the result of a fairly recent migration. Inuit speakers are found north of Norton Sound all the way to the northern coast of Alaska and extending eastward across all of the northernmost parts of Canada and on into Greenland. Aleut is spoken on the Aleutian Islands and the Commander Islands.

## 6.9. Nostratic

Now that we have surveyed the homelands and/or present locations of the Nostratic daughter languages, we are in a position to try to determine the probable homeland of Nostratic itself. Before beginning, however, let us quote what Aaron Dolgopolsky, John C. Kerns, and Henrik Birnbaum have to say about Nostratic in general, about its structure, about its dating, and about its homeland — this will set the stage for what follows.

First, Dolgopolsky (1994:2838):

The [Nostratic] parent language had, most probably, an analytical grammatical structure with a strict word order (sentence-final predicate; object preceding the verb; nonpronominal attribute preceding the head; a special position for unstressed pronouns) and with grammatical meaning expressed by word order and auxiliary words (e.g., postpositions: *\*nu* for genitive, *\*ma* for marked accusative, and others). In the descendant languages this analytic grammar evolved towards a synthetic one. The phonological system (reconstructed by V. Illič-Svityč (1971—84) and A. Dolgopolsky (1989) in the framework of a Nostratic historical phonology) included a rich consonantism (with threefold opposition of voiced/voiceless/glottalized [ejective] stops and affricates, with three series of sibilants and affricates, with lateral obstruents, laryngeal, pharyngeal, and uvular consonants), and a vowel system of 7 vowels. The ancient Nostratic parent language seems to have existed in the pre-neolithic period (up to ca. 15,000 or 12,000 BC) somewhere in southwest Asia. But most descendant proto-languages (e.g., Proto-Indo-European)

existed during the neolithic period (with agriculture and husbandry, resulting in a demographic explosion, which can explain their spread throughout Eurasia and the northern half of Africa).

John C. Kerns (Bomhard—Kerns 1994:153—156) is considerably more specific, not only about the location of the homeland of Nostratic but also about the pre-neolithic environment existing at the time. Therefore, we will quote him at length:

I believe that Nostratic languages did not exist except as a part of Dene-Caucasian until the waning of the Würm glaciation, some 15,000 years ago. At this time the glacial ice began a rapid retreat all along the Northern fringe of Eurasia. In Europe, the effect was particularly dramatic, where the ice had been piled to impressive heights with moisture received from the Atlantic. Huge lakes developed from the melt water, particularly in the lowlands of Southern Russia, and new rivers were eroded into being, to both feed and drain the lakes, and to drain the Northern slopes of Eurasia as they came into view. As the new lands emerged, sub-Arctic winds whipped up the dust of rocks, which had been ground by the movements of glacial ice, and carried it Southward into the newly emerging forests. Most of the dust was deposited in the valleys near rivers, forming the basis of the fertile loess soils that later proved so attractive to early Neolithic farmers with their techniques of slash and burn and their casual herding of domesticated animals. These people included the Chinese in Asia, and also the Indo-Europeans in the Balkans and later in Central Europe with the Linear Pottery expansion around 5000 BCE, and in the lands radiating Northward and Eastward from there.

By 10,000 BCE, the Northern half of Eurasia and North America had been transformed. Formerly glacial and sub-Arctic lands were now temperate forests; only the Circumpolar fringe was still Arctic or sub-Arctic. The great herds of large Arctic mammals had been replaced by more solitary game, and fish abounded in the lakes and streams. People of (ultimately) Aurignacian ancestry adapted their equipment and techniques to take advantage of the new opportunities. The small-blade stone working of the Aurignacians and their successors was refined and elaborated to provide a varied array of new tools and weapons by setting these "microliths" in handles of wood or antler. Greater use was made of bows and arrows (with microlith tips), and dogs were used in the hunt and for food. Fishing industries were established in the rivers and lakes, and particularly in the Baltic, involving nets, boats and bait lines.

As always in hunter-gatherer societies, mobility was at a premium. Canoes were used for water travel and snow shoes and sleds were developed for overland travel in winter. The conditions were favorable for the rapid spread of tribes and their new linguistic family over immense distances. This expansion, which is called Mesolithic, is indicated archaeologically by microliths found all along Northern Eurasia and Southward through the Caucasus into the Near East, where it later developed smoothly into the Neolithic with its domestication of cereals and of animals suitable for food and fibers.

The Mesolithic culture is aptly named, for it provided a gradual though rapid transition between the Upper Paleolithic and the agricultural Neolithic. There was, in fact, a steady advance in man's ability to control and exploit his environment. This point is brought out by Grahame Clark (1980).

The more I study the matter, the more I am convinced that the spread of the Nostratic speaking peoples was occasioned by the spread of the Mesolithic culture, for it occupied the right positions in time and space, and its characteristic features are compatible with the residual vocabulary of the Nostratic families — it was the last of the pre-agricultural eras in Eurasia.

Was the culture unilingual? I believe it was, in origin, though by the time the culture had spread into the more extreme areas — North Africa and Eastern Eurasia and North America — it had broken up into a catenation of mutually unintelligible, though closely related, languages, some of which eventually became ancestral to new linguistic families, including those comprising

the Northern Nostratic sub-phylum we observe today. One reason for assuming a unitary origin is that certain features of vocabulary and morphology are shared between Eskimo-Aleut and Indo-European that occur only vestigially in the intervening families. This includes the heteroclitlic declension. It also includes a few items of shared vocabulary such as Eskimo (Yupik) *alla* 'other' and *ingne* 'fire' (with a velar nasal in the first syllable). The paucity of such correspondences is analogous to the vestigial retention of radioactive atoms after the lapse of several half-lives.

Here, *ingne* is particularly interesting. It reminds us of Latin *ignis* 'fire'. The vowel in the first syllable is controversial since the corresponding vowels in the Lithuanian and Sanskrit words are respectively *u-* and *a-*, which cannot be reconciled with the Latin form or with each other by the accepted rules of phonological correspondence. This suggests that the ancestral word in Nostratic had the velar nasal in the first syllable, preserved in Yupik but perhaps lost sometime during the prehistory of Indo-European. Bomhard informs me that some Indo-Europeanists (cf. Ernout—Meillet 1979:308) have suggested that the Latin form may come from an earlier \**gnis*, with a syllabic nasal in the first syllable.

I believe that the Mesolithic culture, with its Nostratic language, had its beginning in or near the Fertile Crescent just south of the Caucasus, with a slightly later northern extension into Southern Russia in intimate association with woods and fresh water in lakes and rivers. From these positions, it had ready access to the lower Danube and the Balkans (Indo-European), to the Caucasus (Kartvelian), south of the Caucasus into Mesopotamia, Palestine, Egypt, and the rest of North Africa (Sumerian and Afroasiatic), eastward into Central Siberia (Elamo-Dravidian), and northward and thence eastward along the Circumpolar fringe (Uralic-Yukaghir, Altaic, Chukchi-Kamchatkin, Gilyak, and Eskimo-Aleut). In the process of its expansion, it undoubtedly effected a linguistic conversion of many tribes of Dene-Caucasian or other origin; this accounts for the fact that non-Nostratic languages in Eurasia in historic times have been found mostly as relics in mountainous regions. Exceptions are Chinese and the now moribund or extinct Ket, which, together with Hattic and Hurrian, probably represent post-Nostratic reemergences of Dene-Caucasian speakers from their relict areas.

The Nostratic dispersion probably began at least 15,000 years ago, giving ample time for a plethora of eccentric linguistic developments unrecorded in history. By historic times — i.e., as late as the nineteenth century in many instances — the primordial features have been much diluted and transformed. Only by viewing the entire macrofamily holistically can we gain some idea of the features of the original Nostratic language; the importance of Indo-European in this is crucial in that it serves as an intermediate link, linguistically as well as geographically, between Kartvelian, Sumerian, and Afroasiatic on the one hand, and the Circumpolar group (Uralic-Yukaghir to Eskimo-Aleut) on the other. Besides, Indo-European seems to be fairly conservative in its syntactic system, its nominal declension, its pronouns, and its vocabulary in general.

At last we return to the issue I raised at the beginning of this section: Why does Indo-European resemble Afroasiatic in phonology and vocabulary, but the Circumpolar group in syntax and morphology? If the foregoing scenario is correct, or nearly so, it suggests that the Nostratic dispersal began almost as soon as its unity was formed; this is the inevitable result of the peripatetic activities of hunter-gatherers in an expansive situation. If we assume that the speakers of pre-Indo-European remained in the neighborhood of the Caucasus to a fairly late period (say 7500 BCE), with Afroasiatic already extending through Palestine into Egypt and eventually into the rest of North Africa, but with its Semitic branch still situated in Northern Mesopotamia high on the upper slopes of the Fertile Crescent, we would have an explanation for the similarity of vocabulary. That this proximity existed to a late period is suggested by shared words for field, bull, cow, sheep, and goat, animals which were then being domesticated in the Fertile Crescent. In addition, shared words for star and seven suggest a common veneration for that number and perhaps a shared ideology. This is speculative, of course, but if it is true it suggests an association that was social as well as geographical.

Meanwhile, the Circumpolar families were developing in a situation that was geographically and environmentally separate. Here, the Mesolithic way of life has been maintained continuously to recent times; any impulses toward agriculture have been late, and except for the Finno-Ugrians, they all have been received from non-Indo-European sources. The linguistic developments have been equally idiosyncratic. In all of these families the SOV word order and associated morphological principles of early Indo-European have been retained except where subjected to alien influences in more recent times, and they have been maintained with special purity in Altaic and Elamo-Dravidian, which may well have been of Siberian origin. In vocabulary, they show little in common with Indo-European or Afroasiatic except at a strictly pre-agricultural level.

In Uralic-Yukaghir, the linguistic idiosyncrasy is particularly marked. While the syntax and a considerable part of the morphology are basically conservative, the latter has been extended to an astonishing degree in several languages. But the most striking peculiarity of this family is the remarkable simplification that has developed in its consonantal system (reminiscent of Tocharian in Indo-European), and in the paucity of the Nostratic vocabulary that it has retained. It suggests a long isolation along the North Siberian fringe in the neighborhood of tribes not yet converted to Nostratic speech, for these features are less prominent in the other families of this group.

By the same token, it also suggests that the similarities shared by Uralic with Indo-European, or Eskimo-Aleut are very likely to have been features of the original Nostratic since borrowing among these groups is excluded by their mutual isolation until much more recent times. Although the similarities are few as discernible at this late date, they are sufficiently striking that they are unlikely to have been due to independent developments.

Finally, the following quote is what the well-known Slavicist Henrik Birnbaum has to say about the Nostratic Hypothesis in general and about the Nostratic homeland in particular (Birnbaum 1992:25):

If, in conclusion, I were to indicate my own position with regard to the still highly controversial issue of Nostratic, I would have to say that I have no difficulty in accepting the notion of a Nostratic macrofamily of languages comprising at least the six language families envisioned by Illič-Svityč and Dolgopol'skij. However, my understanding of such a macrofamily — and similar considerations would presumably apply to other large-scale language groups elsewhere in the world — would not, and could not, be based exclusively on evidence of genetic relationship as defined above. Linguistic macrofamilies (such as the one we term Nostratic) must, I submit, be viewed as the tangible result of both genetic relationships resulting from divergence and structural adjustments reflecting convergent trends in linguistic evolution. Consequently, and in line with some of the views propounded by Baudouin de Courtenay, Polivanov, and Trubeckoj, I would consider it fairly realistic to hypothesize a once actually spoken Nostratic ancestral language. Presumably, this language was characterized by a degree of inner cohesion comparable to what, *mutatis mutandis*, we can assume to have been the case with, say, Common Baltic or, possibly, Anatolian in their chronological and substantive development from Proto-Indo-European. And perhaps, if the heartland of Proto-Nostratic, as just qualified, is indeed to be identified with an area encompassing Transcaucasia, eastern (and southern) Anatolia, as well as the upper reaches of the Tigris and Euphrates, it would not be too far-fetched to assume secondary Indo-European protohomes in territories closer to the Black Sea, namely in the Pontic Steppe region, in northern and western Anatolia, and in parts of the Balkan Peninsula. This would further provide at least a point of departure for a reasonable explanation for the early settlement of the Greeks in mainland Greece and the archipelagos of the Aegean; for the formation of a secondary — if not tertiary — Indo-European core area focused in the Baltic region; and possibly even for

the yet largely opaque earliest moves of Celtic tribes throughout Western, Central, and Southeastern Europe.

In my opinion, Kerns has hit the nail on the head (Bomhard—Kerns 1994:155): “I believe that the Mesolithic culture, with its Nostratic language, had its beginning in or near the Fertile Crescent just south of the Caucasus”. Let us now reexamine the evidence from the Nostratic daughter languages and see how it leads to this conclusion.

The Indo-European homeland was most likely to the north of and between the Black and Caspian Seas. However, Nichols has convincingly argued that Pre-Indo-European originated in Central Asia and later spread westward to the North Pontic/Steppe zone that was the geographical location where Proto-Indo-European proper developed, where it began to split up into different dialect groups, and from which its descendants spread into Europe, the Iranian plateau, and northern India. Likewise, again as argued by Nichols, Pre-Uralic may be presumed to have originated in Central Asia and to have spread westward, following a more northerly route than Pre-Indo-European. Thus, it is likely that the Eurasiatic parent language was located in Central Asia and that it is to be dated roughly at about 9,000 BCE. This would mean that the eastern Eurasiatic languages (Altaic, Chukchi-Kamchatkan, Gilyak, and Eskimo-Aleut) must have spread eastward from Central Asia (more specifically, the area traditionally called “Western Turkestan”) to their prehistoric homelands. Nichols has also speculated that Pre-Kartvelian may have originally been located in Central Asia, from which it spread westward along a southern route below the Caspian Sea to the Caucasus Mountains. The Elamo-Dravidian homeland may be placed roughly in western and central modern-day Iran and dated at about 8,000 BCE. Finally, the homeland of Afroasiatic may be placed in the Middle East in the Levant and dated at about 10,000 BCE. Working backwards geographically and chronologically, we arrive at the only possible homeland for Proto-Nostratic, namely, “the Fertile Crescent just south of the Caucasus”.

Thus, the following scenario emerges: The unified Nostratic parent language may be dated to between 15,000 to 12,000 BCE, that is, at the end of the last Ice Age — it was located in the Fertile Crescent just south of the Caucasus (see Map 4). Beginning around 12,000 BCE, Nostratic began to expand, and, by 10,000 BCE, several distinct dialect groups had appeared. The first to split off was Afroasiatic. One dialect group spread from the Fertile Crescent to the northeast, eventually reaching Central Asia sometime before 9,000 BCE — this was Eurasiatic. Another dialect group spread eastward into western and central Iran, where it developed into Elamo-Dravidian at about 8,000 BCE. If Nichols is correct in seeing Pre-Kartvelian as having migrated from Central Asia westward below the Caspian Sea to the Caucasus, this would seem to imply that Pre-Kartvelian had first migrated northeastward from the Fertile Crescent along with or as part of Pre-Eurasiatic, that it stopped somewhere along the way, and that it then returned to the Middle East. The early dispersal of the Nostratic languages is shown in Map 5.

Analysis of the linguistic evidence has enabled us to determine the most likely homeland of the Nostratic parent language, to establish a time-frame during which Proto-Nostratic might have been spoken, to date the disintegration of Nostratic, and to trace the early dispersal of the daughter languages. To round out the picture, let us now correlate the linguistic data with archeological data. During the last Ice Age (the so-called “Würm glaciation”), which reached its

zenith about 18,000 to 20,000 years ago, the whole of northern Eurasia was covered by huge sheets of ice, while treeless steppe tundra stretched all the way from the westernmost fringes of Europe eastward to well beyond the Ural Mountains. It was not until about 15,000 years ago that the ice sheets began to retreat in earnest. When the ice sheets began melting, sea levels rose dramatically, and major climatic changes took place — temperatures rose, rainfall became more abundant, all sorts of animals (gazelles, deer, cattle, wild sheep, wild goats, wild asses, wolves, jackals, and many smaller species) became plentiful, and vegetation flourished. Areas that had formerly been inhospitable to human habitation now became inviting. Human population increased and spread outward in all directions, exploiting the opportunities created by the receding ice sheets. New technologies came into being — toward the end of the last Ice Age, hunter-gatherers had inhabited the Middle East, living either in caves or temporary campsites. As the Ice Age began coming to an end, more permanent settlements started to appear, and there was a gradual transition from an economy based on hunting and gathering to one based on cultivation and stock breeding. This was the setting in which Nostratic arose. Nostratic was indeed at the right place and at the right time. The disintegration of the Nostratic parent language coincided with the dramatic changes in environment described above, and Nostratic-speaking people took full advantage of the new opportunities.

Roaf (1990:18) has an interesting map showing the spread of agriculture in the ancient Middle East and beyond (see Map 6; see also Cavalli-Sforza et al. 1994:257 and Guilaine [ed.] 1989:118). It is striking how closely this map matches the early dispersal of Nostratic languages as shown in our Map 4, though the time-frames are different — the language spread seems to have preceded the spread of agriculture by about three millennia, at least in Central Asia. It is tempting to speculate that the spread of agriculture may have been facilitated by the cultural contacts that seem to have been maintained among the speakers of the early Nostratic daughter languages (for more discussion, see the following section on Eurasiatic). There is, however, one very important exception, namely, the spread of agriculture into and throughout Europe, which could not have been in any way connected with the early dispersal of the Nostratic daughter languages, since Nostratic languages do not appear in Europe until a much later date. In what follows, I would like to offer a proposal to account for this.

Nostratic-speaking people were not the only population group in the Middle East at the time that the dramatic changes described above were taking place. To the north, in Anatolia and the Caucasus, were very early Caucasian-speaking people (as evidenced by the later Hattic, Hurrian-Urartean, and, perhaps, Gutian [so Diakonoff 1990:63] in Anatolia), and these people were also active participants in the “Neolithic Revolution” and the consequent development and spread of agriculture and stock breeding. I suggest that these were the people responsible for the spread of agriculture into Europe, not early Nostratic-speaking people and definitely not Indo-Europeans as suggested by Renfrew. I further suggest that it was the migration of these ancient Caucasian-speaking agriculturalists into the Balkans that gave rise to the civilization of “Old Europe” (on Old Europe, see Paliga 1989). Thus, we can plot two distinct migrations into Europe: the earliest, which crossed from Anatolia into the Balkans and then spread northward into Europe, began about 10,000 years ago. I am proposing that this migration was by Caucasian-speaking agriculturalists. The second, which came from the Russian steppes and spread westward into Europe, began about 6,000 years ago. This migration was by Indo-



European-speaking horsemen. As a result of this migration, Indo-European languages gradually replaced all of the earlier languages of Europe except for Basque.

#### 6.10. Eurasiatic

In the preceding section, I stated that the Nostratic dialect group which developed into Proto-Eurasiatic spread from the Fertile Crescent to the northeast, eventually reaching Central Asia sometime before 9,000 BCE. At the time of their arrival in Central Asia, the climate of the area was too dry to support primitive agriculture — it was not until the eighth millennium BCE that climatic conditions significantly improved. Therefore, we would expect to find no traces of agriculture in this region before this date, and indeed there are none. Nonetheless, there is evidence for early trade and cross-cultural contacts between northeastern Iran, Central Asia, and the Fertile Crescent dating as far back as Mesolithic times (cf. V. Sarianidi 1992:112—113). Moreover, in northeastern Iran, on the southeastern shores of the Caspian Sea, there is evidence that wild goats and sheep were hunted as early as the twelfth and eleventh millennia BCE, and these were among the first animals to be domesticated. The earliest known Neolithic remains in northeastern Iran go back to about the seventh millennium BCE. By the sixth millennium BCE, Neolithic culture had spread northward into Central Asia — the Neolithic settlement patterns and technology (pottery, agriculture, stock breeding, etc.) appearing in this area were clearly imported from the Middle East (cf. Cavalli-Sforza et al. 1994:198). On the basis of this information, we may surmise that the earliest Nostratic-speaking people to appear in Central Asia were Mesolithic hunter-gathers, not agriculturalists, though agriculture and stock breeding slowly followed. Even after the introduction of agriculture, there is evidence of different cultural traditions co-existing in the region, as noted by Sarianidi (1992:126):

The culture of Neolithic agricultures and of cattle-breeders of Iran, Afghanistan and Soviet Central Asia shows that a transition to the forms of economy, usually termed the 'Neolithic Revolution', took place here almost simultaneously with similar developments in western Asia. A new way of life is clearly represented here by comfortable houses with accurate trimming of interiors, bright ceramics and wide use of ornaments. This qualitative leap in social development prepared the necessary base for the creation of ancient civilizations. At the same time inequalities in the course of historical development become clear: the ancient tribes of Iran and southern Turkmenistan passed to the new forms of economy, while in other areas of Soviet Central Asia and northern Afghanistan the transition was delayed. Tribes of hunters, fishers and food-gatherers, maintaining many archaic features in their culture, were contemporary with sedentary communities in oases. The lines of cultural links that emerged during the Palaeolithic epoch not only keep their importance but also become stronger — a fact which played an important role in the diffusion of cultivating cereals and of cattle-breeding.

**Map 1: The Indo-European Homeland**



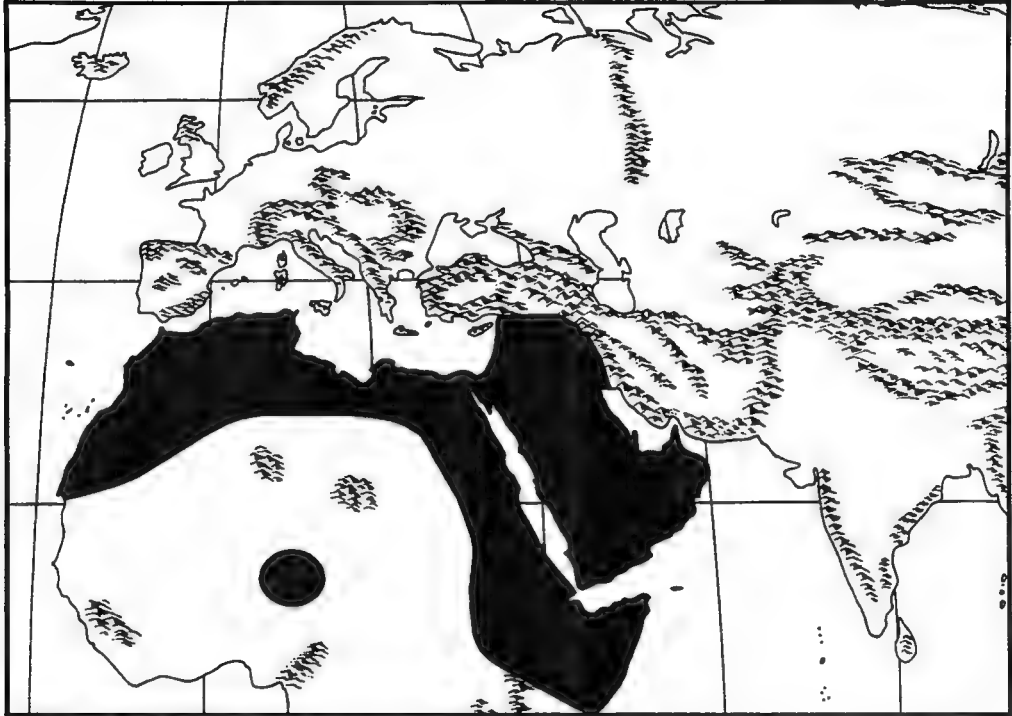
The shaded area shows the homeland of Indo-European-speaking people at about 5,000 — 4,500 BCE (cf. Villar 1991:15).

**Map 2: The Dispersal of the Indo-European Languages**



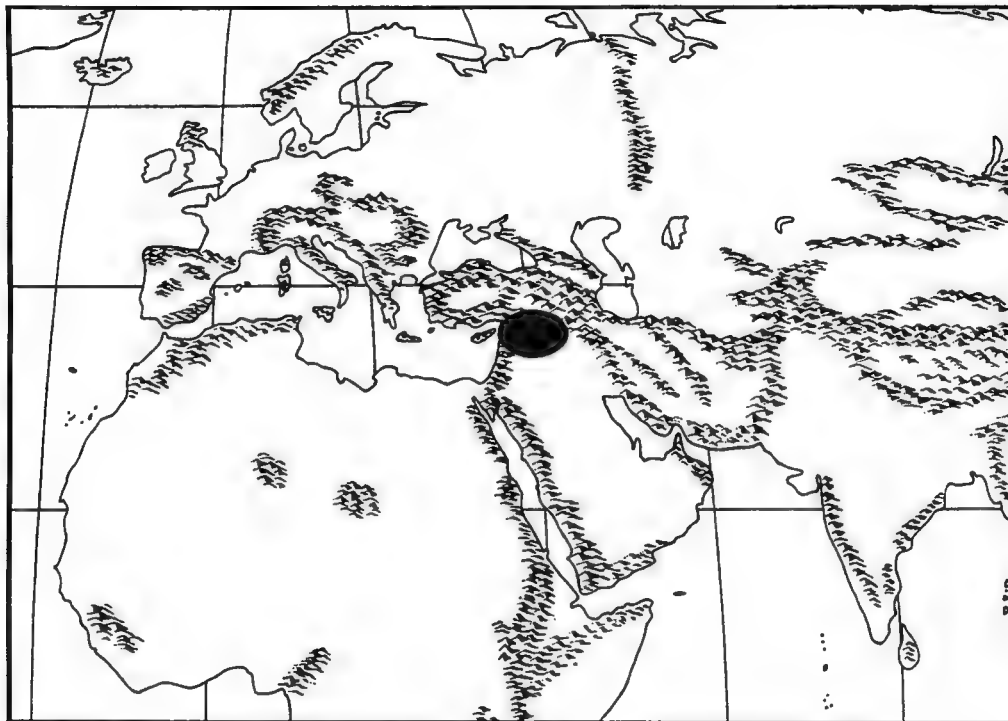
This map shows the approximate area to which Indo-European languages had spread by the first century BCE (cf. Villar 1991:17).

**Map 3: The Distribution of Afroasiatic Languages at about 500 BCE**



This map shows the approximate distribution of the Afroasiatic languages at about 500 BCE — it is adapted from the map facing page 1 in Cohen (ed.) 1988.

**Map 4: The Nostratic Homeland**



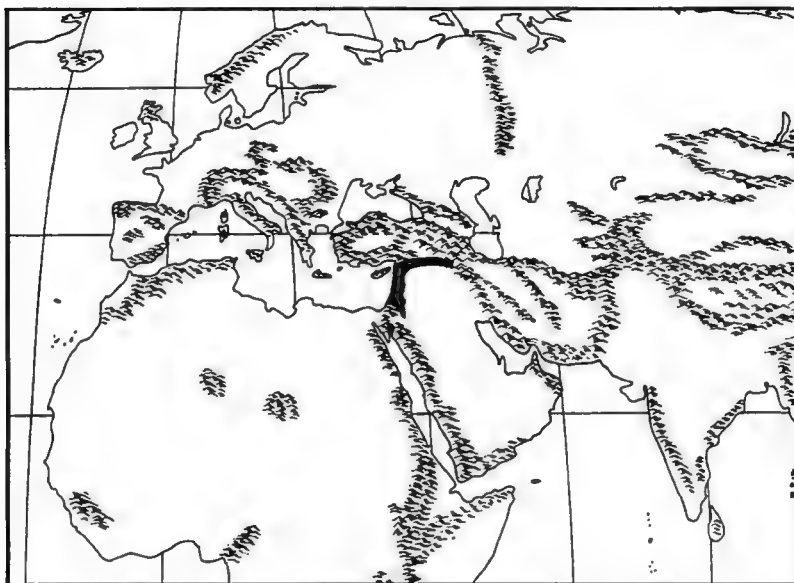
This map shows the approximate location of the Nostratic homeland at about 15,000 BCE.

**Map 5: The Early Dispersal of the Nostratic Languages**

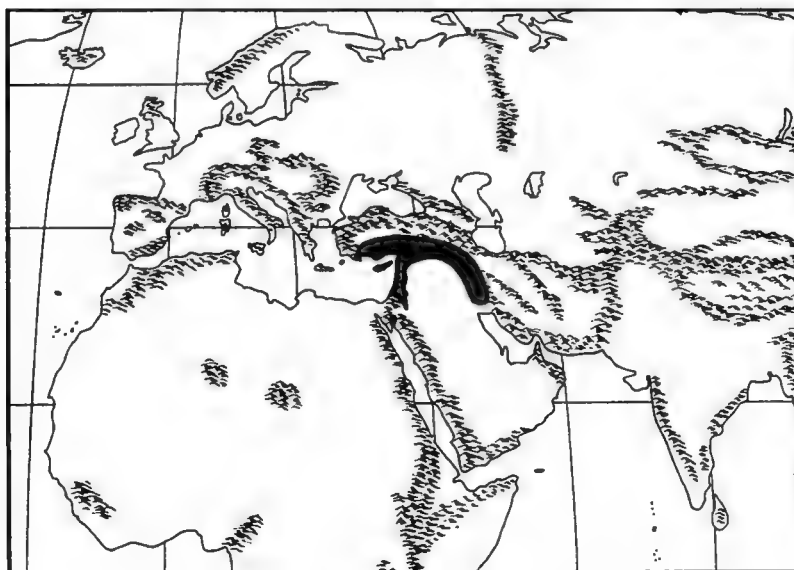


This map shows the approximate areas to which Nostratic languages had spread by about 8,000 BCE.

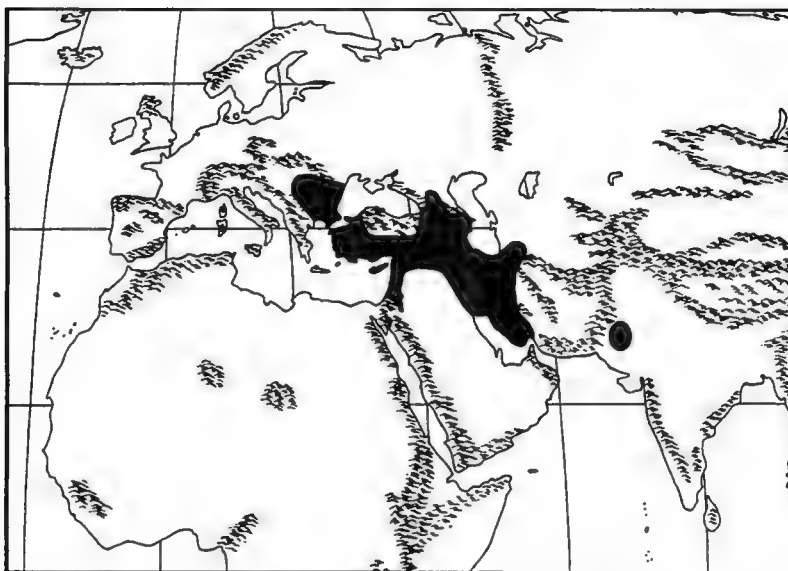
**Map 6a: The Spread of Agriculture to 8,000 BCE**



**Map 6b: The Spread of Agriculture to 7,000 BCE**



**Map 6c: The Spread of Agriculture to 6,000 BCE**



**Map 6d: The Spread of Agriculture to 5,000 BCE**





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## Problem Areas and Future Prospects

### 7.1. The Problem of Altaic

As noted by Merritt Ruhlen (1987:128):

The study of the Altaic family has had a long and stormy history, and even today there is considerable disagreement among specialists over exactly which languages belong to the family.

The similarities between what has come to be known as the “Altaic” languages were recognized over two and a half centuries ago by the Swedish military officer Johann von Strahlenberg, who published a work on the subject in 1730. The famous Danish scholar, and one of the founders of Indo-European comparative grammar, Rasmus Rask also conducted research into these languages as well as Eskimo, several Uralic languages, and what have sometimes been called the “Paleosiberian” languages. In the middle of the last century, important work was done by the Finnish linguist Matthew Alexander Castrén. It was another Finnish scholar, Gustav John Ramstedt (cf. Poppe [1965:83—85] for a sketch of Ramstedt’s life), who really put Altaic comparative linguistics on a firm footing. Ramstedt published many important studies, culminating in the publication (1952—1957) of his two-volume *magnum opus* (in English translation) *Introduction to Altaic Linguistics*. A few of the many scholars who have made significant contributions to Altaic linguistics are: Pentti Aalto, Johannes Benzing, Erich Haenisch, Shiro Hattori, Wladyslaw Kotwicz, Samuel E. Martin, Karl H. Menges, Roy Andrew Miller, Antoine Mostaert, Gyula (Julius) Németh, Jerry Norman, Martti Räsänen, András Róna-Tas, Andrew Rudnev, Aurélien Sauvageot, Boris A. Serebrennikov, Denis Sinor, John C. Street, Vilhelm Thomsen, Vera Ivanovna Tsintsius (Cincius), Boris Yakovlevich Vladimirtsov, and others too numerous to count, including several Russian, Korean, and Japanese scholars. One of the most prominent Altaic scholars of this century is the Russian-born Nicholas Poppe, who has published numerous books and articles, including (in English translation) *Khalkha-Mongolian Grammar* (1951), *Introduction to Mongolian Comparative Studies* (1955; reprinted 1987), (in English translation) *Comparative Grammar of the Altaic Languages* (1960; only Part I appeared), *Introduction to Altaic Linguistics* (1965), and *Grammar of Written Mongolian* (third printing 1974). The most noteworthy recent work (1991) is the monograph by the highly respected Russian linguist Sergej A. Starostin entitled (in English translation) *The Altaic Problem and the Origin of the Japanese Language*. Strong opposition to the Altaic Hypothesis has been expressed by several reputable scholars, perhaps the most vocal being Gerhard Doerfer and Gerard Clauson. At the Workshop on Linguistic Change and Reconstruction Methodology

held at Stanford University from 28 July through 1 August 1987, the consensus of the Altaic panel was that "we found Proto-Altaic, at best, a premature hypothesis and a pragmatically poor foundation on which to build a sustained research program" (cf. Baldi [ed.] 1990:479; the quotation is from the "Summary Report of the Altaic Panel" prepared by J. Marshall Unger). Finally, we may note in passing that Illič-Svityč also made a couple of important contributions to Altaic linguistics.

Traditionally, Altaic has included the core groups (Chuvash-)Turkic, Mongolian, and (Manchu-)Tungus, to which some have tried to add Korean, Japanese-Ryukyuan, and Ainu. Looking at just the core group, one is hard-pressed to find features common to all three. There are, to be sure, common features between (Chuvash-)Turkic and Mongolian on the one hand and between Mongolian and (Manchu-)Tungus on the other, but there appear to be relatively few features common to (Chuvash-)Turkic and (Manchu-)Tungus alone. All three are, in fact, similar in structure, but this has been considered by some to be strictly a typological characteristic. The common features found between the members of the core group have been explained as due to diffusion, and, for a good portion of the common lexical material, this seems to be a valid explanation. There are, however, features common (pronouns, to cite a single example) to the members of the core group as a whole that cannot be explained as due to diffusion, and which do indeed point to some sort of genetic relationship. The problem is in trying to define the nature of that relationship. Two explanations are possible: (1) The shared features are due to common descent from Proto-Nostratic and do not imply a closer relationship between the three. In this scenario, (Chuvash-)Turkic, Mongolian, and (Manchu-)Tungus turn out to be three independent branches of Nostratic. (2) The shared features are due to descent from a common Altaic parent language intermediate between Proto-Nostratic and each of the core group members. The problem with the first explanation is that it merely shifts the question back to the Nostratic level without resolving a thing, whereas the second explanation keeps the focus exactly where it belongs, namely, on the core group. The second alternative thus remains a viable hypothesis. I would unhesitatingly include the following groups within the Altaic language family: (Chuvash-)Turkic, Mongolian, (Manchu-)Tungus, and Korean, while Japanese-Ryukyuan appears to be made up of an Altaic element that has been superimposed on an Austronesian substratum. The shared features between (Chuvash-)Turkic, Mongolian, and (Manchu-)Tungus may be looked upon as due to common descent from an Altaic parent language. Language change over time has gradually led to increasing differentiation between each of the three core group members, while diffusion, especially lexical diffusion, has tended to complicate the picture and has made it difficult to differentiate between that which is borrowed and that which is inherited.

The whole question of Altaic unity has recently been reexamined by Roy Andrew Miller (1991). Miller addresses and convincingly demolishes objections that have been raised by those opposed to setting up an Altaic language family, and he concludes his paper by listing a number of important tasks that must be undertaken by Altaicists to redirect "Altaic historical-linguistic studies back into the mainstream of comparative linguistics". The new book by Sergej Starostin (1991) attempts to clarify many of the issues surrounding the problems associated with setting up an Altaic language family, including the relationship of Korean and Japanese to the other Altaic language groups (but see the reviews by Comrie [1993] and Krippes [1994]).

## 7.2. The Origin of Etruscan

In spite of several heroic efforts, Etruscan has never been convincingly shown to be related to any known language or language family. This applies as well to recent attempts by Russian scholars to establish a connection between Etruscan and Northeast Caucasian (cf. Orël—Starostin 1990). And yet, there are some important clues as to the origin of Etruscan, and these need to be looked at in a new perspective, but, first, a few introductory comments ought to be made.

Etruscan was spoken in central Italy, with the largest concentration of speakers being in the region now known as Tuscany. It is now generally accepted that Etruscan was an indigenous language of Italy and not a recent importation. The first written documents date from the 7th century BCE, while the latest date from the first century CE, which is probably not far beyond the time that Etruscan became extinct. Etruscan was usually written from right to left in an alphabet based mostly on Western Greek models. Though approximately 13,000 Etruscan inscriptions have been found, the overwhelming majority of them are extremely brief. The phonological system was simple: There were only four vowels, namely, *a*, *e*, *i*, *u*, and the consonant system distinguished a relatively small number of phonemes and lacked a voicing contrast in stops. Syntactically, Etruscan word order was SOV.

Looking closely at Etruscan, it is clear that it contains unmistakable Nostratic elements, including the personal pronouns *mi* “I”, and *mini* “me”, the demonstrative pronouns *eca*, *ca* “this” and *ita*, *ta* “this”, and several lexical items such as, for example, *maθ* “honey, honeyed wine” (cf. Proto-Indo-European *\*med[h]u* “honey, mead”; Proto-Finno-Ugrian *\*mete* “honey”; Proto-Dravidian *\*maṭṭu* “honey, nectar, toddy” [Bomhard—Kerns 1994:665—666, no. 543]), *apa* “father” (cf. Indo-European: Gothic *aba* “man, husband”; Proto-Afroasiatic *\*ʔab-* “father, forefather, ancestor”; Proto-Dravidian *\*appa-* “father”; Proto-Altaic *\*aba* “father”; Sumerian *a-ba*, *ab*, *ab-ba* “father” [Bomhard—Kerns 1994:572—573, no. 440]), *hanθin* “in front of” (cf. Indo-European: Hittite *ḫanti* “facing, frontally, opposite, against”, *ḫanza* “in front”; Sanskrit *ánti* “in front of, before, near”; Afroasiatic: Egyptian *ḥnt* “face, front part; in front of” [Bomhard—Kerns 1995:554, no. 414]), *pi* (also *pul*) “at, in, through” (cf. Indo-European: Gothic *bi* “about, over; concerning, according to”, Old English *bī*, *bi*, *be* “[of place] near, in, on, upon, with, along, at, to; [of time] in, about, by, before, while during; for, because of, in consideration of, by, by means of, through, in conformity with”, Sanskrit [with prefix] *a-bhī* “to, towards”; Afroasiatic: Proto-Semitic *\*ba/\*bi* “in, with, within, among”; Sumerian *bi* “with, together with, in addition to” [Bomhard—Kerns 1994:218—219, no. 23]), *tev-* “to show, to set” (cf. Proto-Kartvelian *\*dew-/dw-* “to lay, to put, to place, to set”; Sumerian *dū* “to do, to make; to build; to set up, to establish” [Bomhard—Kerns 1994:276, no. 90]). There is also a pronoun *θi*, whose meaning is unknown, but which resembles the Nostratic 2nd singular personal pronoun. That *θi* may, in fact, have been the 2nd singular personal pronoun finds support in the verbal 2nd person imperative endings *-ti*, *-θ*, *-θi*. But, there is more. The declensional system is blatantly reminiscent of Indo-European, and verb morphology, though poorly known, also exhibits Indo-European characteristics. There are five noun stem types (cf. Georgiev

1981:232—233): (A) stems ending in *-a*, with genitive singular in *-as* or *-as̑*; (B) stems ending in *-i*, with genitive singular in *-is*, *-ias*, or (rarely) *-aias*; (C) stems ending in *-ai*, with genitive singular in *-ias* or *-aias*; (D) stems ending in *-u*, with genitive singular in *-us*; and (E) consonant stems, with genitive singular in *-as* or (later) *-s*. These correspond to similar stem types in Indo-European. Moreover, the genitive singular in *-s* is typically Indo-European. Etruscan also had an archaic genitive in *-n* (*-an*, *-un*), which corresponds to the Indo-European genitive plural in *\*-om* (also with long vowel: *\*-ōm* < *\*-o-om*). In demonstrative stems, the accusative ends in *-n*, and this also has a correspondence with the Indo-European accusative singular ending *\*-om*. The locative in *-ti*, *-θ(i)* has parallels in Anatolian (Hittite ablative singular *-az*, *-aza* [*z* = /ts/], instrumental singular *-it*; Luwian ablative-instrumental singular *-ati*; Palaic ablative-instrumental singular *-at*; Lycian ablative-instrumental singular *-edi*, *-adi*) and in other Nostratic languages in the Uralic ablative ending and the Elamo-Dravidian oblique/locative ending (see Chapter 5, §5. Noun Morphology). There are also Indo-European elements in the vocabulary, a few examples being: Etruscan *-c* “and” (cf. Sanskrit *-ca* “and”, Latin *-que* “and”), *semp* “seven” (cf. Latin *septem* “seven”, Sanskrit *saptá* “seven”), *tin* “day, Jupiter” (cf. Sanskrit *dīna-m* “day”, Old Church Slavic *дѣнь* “day”), and *tiu*, *tiv-*, *tiur* “moon, month” (same stem as in Sanskrit *dīvasa-ḥ* “heaven, day”, *divyá-ḥ* “divine, heavenly, celestial”, etc.), *ṭam-* “to build, to found” and *tmia* “place, sacred building” (same stem as in Latin *domus* “house, home; dwelling abode”, Sanskrit *dāma-ḥ* “house, home”, Greek *δέμω* “to build, to construct”), *an* (*ana*, *ane*, *anc*, *ananc*) “he, she” (cf. Sanskrit demonstrative stem *ana-* “this”, Hittite demonstrative *anniš* “that, yonder”, Lithuanian demonstrative *anàs* “that one [over yonder]”), *car-*, *cer-* “to make, to build” (cf. Sanskrit *kárati* “to do, to make, to perform, to accomplish, to cause, to effect, to prepare, to undertake, to work at, to build” [Pokorny 1959:641—642 *\*kʷer-* “to make, to form”]), *neri* “water” (cf. Sanskrit *nārāḥ* “water”, *Narmadā* the name of a river). These give no indication of being borrowings. The following may be a borrowing: *nefīs*, *nefš*, *nefīs* “grandson” (< Latin *nepos* “grandson”).

These and other similarities are discussed in detail in recent articles by Adrados (1989a:363—383) and Woudhuizen (1991:122—150). Adrados draws the conclusion that Etruscan is an archaic Indo-European language and that it is particularly close to the languages of the Anatolian branch. Woudhuizen reaches a similar conclusion. The conclusions reached by Adrados and Woudhuizen are sober and persuasive, and, therefore, I am strongly inclined to accept their views. The following hypothesis may be proposed: Etruscan was one of the first branches to separate from the main Indo-European speech community. Coming from Central Europe, pre-Etruscan Indo-Europeans migrated westward and eventually settled in Central Italy. These intruders may be equated with the Rinaldone culture, which dates from around 2,700 BCE and which contains unmistakable Indo-European cultural elements. We may assume that they imposed their speech and culture upon non-Indo-European people. It is this non-Indo-European substratum that has left a trace in the Etruscan lexicon, and which has made it difficult to ascertain the fundamentally Indo-European character of Etruscan. The similarities that several scholars have seen between Etruscan and the Anatolian languages are real and can be accounted for by assuming that both became separated from the main speech community at about the same

time and that, therefore, they represent a more archaic stage of development than that found in later stage languages such as Greek, Italic, Indo-Iranian, Baltic, Slavic, Germanic, Albanian, and Armenian, which began to differentiate from each other considerably later and which, consequently, shared many common developments as a group. References: Bonfante 1990; Bonfante—Bonfante 1983; Georgiev 1979 and 1981:229—254 (these works must be used with caution); Pfiffig 1969.

Future research must be directed toward testing the validity of the conclusions reached in this section, especially in light of the growing body of literature on Nostratic.

### 7.3. The Placing of Sumerian

Sumerian shares a number of interesting lexical parallels with other Nostratic languages (these are listed in several papers by Boisson and in Bomhard—Kerns 1994:195—714), including some core vocabulary items such as pronominal stems, though there are important differences here as well. Thus, Sumerian *may* be an ancient Nostratic language. In a number of privately-circulated papers, Claude Boisson has explored lexical parallels between Sumerian and Dravidian, while Anumugam Sathasivam (1965), in an unpublished manuscript, has tried to show that Sumerian is related to Dravidian. Though I have very tentatively accepted a modified version of Sathasivam's (and Boisson's) theories, placing Sumerian as a sister to Proto-Elamo-Dravidian, I am not entirely satisfied with this arrangement. True enough, Sumerian has an agglutinating morphological structure, as do Elamite and Dravidian, and the nominal case endings, for example, are, in reality, bound postpositions in both Sumerian and Elamo-Dravidian. However, Sumerian is sufficiently different from both Elamite and Dravidian to make me think that it may be an independent branch of Nostratic, perhaps one of the earliest to separate from the main speech community.

Before beginning, we should give a brief sketch of Sumerian grammatical structure, noting first and foremost that, even after more than a century of intensive study, there is still not widespread agreement among experts in the field on many fundamental questions of Sumerian grammar. Nevertheless, the overall structure is clear. Three word classes were distinguished: (A) nouns, (B) verbs, and (C) adjectives. Even though grammatical gender in the strictest sense did not exist, nouns fell into two classes, namely, animate and inanimate, which were only distinguished in the 3rd person actor verbal and possessive pronoun affixes and in the relative pronoun. Ten cases (genitive, absolutive, ergative, dative, locative, comitative, terminative, ablative-instrumental, and equative [in nouns] plus subject case [in pronouns only]) and two numbers (singular and plural) were distinguished. The plural was indicated by means of the suffix *-ene*, which was used only with animate nouns, or by reduplication. In later texts, the plural could also be indicated by the form *hi-a*, which was used with inanimate nouns and which was originally an independent word meaning "mixed, various, unspecified", or by *-me-eš*, which was properly the enclitic copula with plural suffix. Sumerian differentiated between ergative and absolutive in nouns. In pronouns, however, the patterning was that of a nominative-accusative system (so Thomsen 1984:51, §42; Diakonoff, however, disputes this [personal communication]). Sumerian verbs were formed by adding various prefixes and/or affixes

directly to the verbal root, which was itself invariable. Verbal constructions fell into one of two categories, namely, finite forms or non-finite forms. Finite verbal stems distinguished three conjugational types: (A) the intransitive conjugation, (B) the transitive *hamtu* conjugation, and (C) the transitive *marû* conjugation. Intransitive forms were noted by means of pronominal suffixes, while transitive forms were noted by means of either prefixes, suffixes, or both. Syntactically, the basic word order was SOV.

To illustrate the problems involved in trying to determine the placement of Sumerian, let us begin by looking at the differences between the case endings reconstructed for Proto-Elamo-Dravidian by McAlpin (1981:111) with those found in Sumerian (cf. Thomsen 1984:88—89):

A. Proto-Elamo-Dravidian:

Nominative:	*-Ø
Accusative:	*-(V)n
Adessive/	*-əkkə
Purposive (Dative):	(?)
Genitives:	
1. Possessive:	*-a
2. Adnominal:	*-in
3. Oblique/	*-tə
Locative	

B. Sumerian:

Case	Animate	Inanimate	Prefix Chain
Genitive:	-ak	-ak	
Absolutive:	-Ø	-Ø	
Ergative:	-e	-e	
Dative:	-ra		-na-, etc.
Locative:		-a	-ni-
Comitative:	-da	-da	-da-
Terminative:	-šè	-šè	-ši-
Ablative-Instrumental:		-ta	-ta- and -ra-
Equative:	-gin <sub>7</sub>	-gin <sub>7</sub>	

The prefix chain cases require special explanation (I will quote from Thomsen 1984:215 and 219 [for the dative, §431 below]):

§ 423. Some cases, the so-called dimensional cases, can be incorporated in the prefix chain of finite verbal forms. These cases are: dative, comitative, terminative, ablative, and locative. In principle the case elements have the same shape as the corresponding postpositions and only minor changes in writing and pronunciation occur.

The rank of the case elements in the prefix chain is between the conjugation prefixes and the pronominal element serving as subject/object mark...

#### § 424. Terminology

The case elements of the prefix chain are most often called 'infixes' or 'dimensional infixes' by the sumerologists. However, since they do not act as infixes in the stem but merely as members of the chain of grammatical elements preceding a verbal root, 'case elements' or 'case prefixes' are used here as the most appropriate terms.

§ 431. The dative is the only case prefix which has different prefixes for every person...

1.sg.	ma- < /mu-a-/	1.pl.	-me-
2.sg.	-ra-	2.pl.	?
3.sg.an.	-na- < /-n-a-/	3.pl.	-ne-

There are parallels, to be sure, but as many with *other* Nostratic languages as with Elamo-Dravidian. The Sumerian ablative-instrumental case ending (inanimate) *-ta*, (prefix chain) *-ta* agrees with the Proto-Uralic ablative ending *\*-ta* as well as with the Proto-Elamo-Dravidian oblique/locative ending *\*-tə*. The Sumerian locative case ending (prefix chain) *-ni* is similar to the Proto-Uralic locative case ending *\*-na*, though the vowels are problematic, and to the Proto-Dravidian locative case ending *\*-in* (*\*-il* ?). The Sumerian genitive case ending *-ak* is similar in form to the Proto-Dravidian dative case ending *\*(k)ku* and the Proto-Elamo-Dravidian adessive/locative (dative) *\*-əkkə*, but the difference in function is a problem. Moreover, the *-na*- and *-ni*- prefix chain case endings may be somehow related to the oblique-*n* formations described by John C. Kerns (cf. Bomhard—Kerns 1994:173—179, §3.5.3.1).

An extremely interesting parallel involves the Sumerian comitative element *da* (also *-dè*). As noted by Thomsen (1984:99): "The basic meaning of the comitative is 'with', 'together with', expressing accompaniment as well as mutual action." A particle *\*da/\*də*, with the basic meaning "along with, together with, in addition to", shows up all over Nostratic (cf. Bomhard—Kerns 1994:275—276, no. 89). It appears in Kartvelian as a conjunction: Georgian *da* "and", Mingrelian *do* "and", Zan *do* "and" < Proto-Kartvelian *\*da* "and", and probably as the adverbial case ending *-ad/d* found, for example, in Old Georgian (in Modern Georgian, the ending is *-ad[a]*). In Afroasiatic, it is found in Chadic: Hausa *dà* "with; and; by, by means of; regarding, with respect to, in relation to; at, in, during; than"; Kulere *tu*; Bade *də*; Tera *ndə*; Gidar *dì*; Mokulu *ti*; Kanakuru *də* < Proto-Chadic *\*də* "with, and". Elamite has *da* "also, too, as well, likewise; so, therefore, consequently, accordingly, hence; thereby, thereupon". Particularly interesting is Altaic, where this particle functions as a locative suffix on the one hand, *\*-da*, and as an independent particle on the other, *\*da* "together with, and, also": Common Mongolian dative-locative suffix *\*-da* > Mongolian *-da*; Dagur *-da*; Khalkha *-də*; Buriat *-da*; Kalmyk *-dö* (cf. Poppe 1955:195—199). In Manchu, the dative-locative particle is *-de*. In Turkic, it also appears as a locative suffix: Common Turkic *\*-da/\*-dä* (cf. Menges 1968:110). It may be preserved in Indo-European in the suffixed particle appearing, for example, in Sanskrit as *-ha* and *-dhi*: *sa-há* "with" (Vedic *sa-dha*), *i-há* "here" (Prakrit *i-dha*), *kú-ha* "where?", *á-dhi*

“above, over, from, in”; in Avestan in *iða* “here”, *kudā* “where?”; and in Greek in the locative particle -*θι* in, for example, *οἶκο-θι* “at home”, *πό-θι* “where?”.

Now let us look briefly at verb morphology. McAlpin (1981:122—123) notes that the Proto-Elamo-Dravidian verbal conjugation “does not survive in Dravidian as a paradigm”. Therefore, we will give the verbal endings as they appear in Middle Elamite, using, once again, the verb *hutta-* “to make” for illustration (cf. Reiner 1969:76; Grillot-Susini 1987:33):

Person	Singular	Plural
1	<i>hutta-h</i>	<i>hutta-hu</i> (< <i>h</i> + <i>h</i> )
2	<i>hutta-t</i>	<i>hutta-ht</i> (< <i>h</i> + <i>t</i> )
3	<i>hutta-š</i>	<i>hutta-hš</i> (< <i>h</i> + <i>š</i> )

McAlpin derives the Elamite 1st sg. ending *-h* from Proto-Elamo-Dravidian *\*-H*, the 2nd sg. ending *-t* from *\*-ti*, and the 3rd sg. ending *-š* from *\*(V)š*. The Proto-Elamo-Dravidian 2nd sg. ending *\*-ti* survives in South Dravidian negative imperatives.

The Sumerian finite verb employs various pronominal elements. These are described by Thomsen (1984:147, §287) as follows:

The pronominal elements of the finite verbal form refer to the persons involved in the verbal action. There are two main series with different marks: the prefixes and the suffixes. A verbal form can have at most one prefix immediately before the verbal root and one suffix after the verbal root (or, if present, after /ed/), both referring to subject and/or object. The prefixes are identical with the pronominal elements which under some conditions occur together with case prefixes...

Thomsen (1984:148—149, §290) lists the following pronominal prefixes:

1.sg.	-?-	1.pl.	- <i>me</i> -
2.sg.	- <i>e</i> -	2.pl.	- <i>e ene</i> -
3.sg. animate	- <i>n</i> -	3.pl.	- <i>ene</i> -
inanimate	- <i>b</i> -		

The plural pronominal prefixes “are used as dative elements only..., and it is thus more probable that they are case elements rather than pronominal elements” (cf. Thomsen 1984:148).

There are also two series of pronominal suffixes (cf. Thomsen 1984:152), the first of which (column A below) marks both the subject of intransitive verbs and the direct object of transitive verbs, the second of which (column B below) “is used in two-part. *marû* forms together with the prefix /-*n*-/ to denote the 3.pl. ergative subject”. In actual fact, only the 3rd persons singular and plural are different (cf. Thomsen 1984:152).



	A		B	
	sg.	pl.	sg.	pl.
1	<i>-en</i>	<i>-enden</i>	<i>-en</i>	<i>-enden</i>
2	<i>-en</i>	<i>-enzen</i>	<i>-en</i>	<i>-enzen</i>
3	<i>-Ø</i>	<i>-eš</i>	<i>-e</i>	<i>-ene</i>

There is simply nothing here that resembles what is found in Elamo-Dravidian nor, for that matter, in other Nostratic languages. For a discussion of the etymology of the pronominal stems, see below.

The Sumerian personal pronoun stems are as follows (the Emesal forms are shown in parentheses; /ḡ/ = /ŋ/)(cf. Thomsen 1984:68; Boisson 1992:437):

	1.sg.	2.sg.	3.sg.	3.pl.
Subject:	<i>ḡá.e</i> ( <i>me.e</i> )	<i>za.e</i> ( <i>ze</i> )	<i>e.ne</i>	<i>e.ne.ne</i>
	<i>ḡá-a-ra</i>	<i>za-a-ra</i>	<i>e.ne-ra</i>	<i>e.ne.ne-ra</i>
Dative:	<i>ḡá-a-ar</i> ( <i>ma-a-ra</i> )	<i>za-a-ar</i>		
Terminative:	<i>ḡá(-a/e)-šè</i>	<i>za(-a/e)-šè</i>	<i>e.ne-šè</i>	<i>e.ne.ne-šè</i>
Comitative:	<i>ḡá(-a/e)-da</i>	<i>za(-a/e)-da</i>	<i>e.ne-da</i>	<i>e.ne.ne-da</i>
Equative	<i>ḡá(-a/e)-gin<sub>7</sub></i>	<i>za(-a/e)-gin<sub>7</sub></i>	<i>e.ne-gin<sub>7</sub></i>	<i>e.ne.ne-gin<sub>7</sub></i>

The possessive suffixes are (cf. Thomsen 1984:71):

	Singular	Plural
1	<i>-ḡu<sub>10</sub></i> “my”	<i>-me</i> “our”
2	<i>-zu</i> “your”	<i>-zu.ne.ne</i> , <i>-zu.e.ne.ne</i> , <i>-zu.ne</i> “your”
3 an.	<i>-a.ni</i> “his, her”	<i>-a.ne.ne</i> “their”
inan.	<i>-bi</i> “its”	<i>-bi</i> also “their”, presumably collective

Right away, we notice that the Emesal 1st singular forms (subject) *me.e*, (dative) *ma-a-ra* are related to the common Nostratic 1st person personal pronoun stem *\*mi/\*me* “I, me” (cf. Bomhard—Kerns 1984:661—662, no. 540; Illič-Svityč 1971— .II:63—66, no. 299 *\*mi*), while the 1st plural possessive suffix *-me* is related to the common Nostratic inclusive 1st plural

personal pronoun stem *\*ma-/mā-* “we, us” (cf. Bomhard—Kerns 1984:661—662, no. 540; Illič-Svityč 1971— .II:52—56, no. 289 *\*mā*). The 2nd person personal pronoun *ze-*, *za-*, *-zu* may also be derived from the Proto-Nostratic 2nd person personal pronoun stem *\*t<sup>h</sup>ji-/t<sup>h</sup>je-* “you” (cf. Bomhard—Kerns 1984:285—287, no. 102; Dolgopolsky 1984:87—89 *\*t<sup>h</sup>üj*), assuming affricatization of the dental before front vowel (similar to what has happened in Mongolian): *\*t<sup>h</sup>ji-/t<sup>h</sup>je- > \*t<sup>h</sup>ji-/t<sup>h</sup>je- > (\*t<sup>h</sup>ji-/)\*t<sup>h</sup>je- > ze- /tse-/*, etc. (Sumerian <z> = /t<sup>h</sup>s/ [cf. Boisson 1989:221—226 and 1992:436]). Finally, the 3rd person forms *e.ne* and *a.ne* are related to the demonstrative pronoun *ne.en*, *ne(-e)*, which is itself related to the Proto-Nostratic demonstrative stem *\*na-/nā-*, *\*ni-/ne-*, *\*nu-/no-* (cf. Bomhard—Kerns 1984:688—689, no. 570). To account for the beginning vowels in *e.ne* and *a.ne*, Shevoroshkin (cited in Boisson 1992:443) has suggested that these appear “to be a compound of the demonstrative / personal pronoun of the 3rd person *\*?i / \*?ä* [...] plus the demonstrative base *\*n(ä)*”. I agree with Shevoroshkin’s suggestion. Though widespread in the Nostratic daughter languages, these stems are lacking in Dravidian (though see Dolgopolsky 1984 for a slightly different interpretation of some of the Dravidian material). Zvelebil (1977:40) reconstructs the following personal pronoun stems for Proto-Dravidian:

	Singular	Plural
1	<i>*yān : *yan-</i> “I”	(incl.) <i>*yām : *yam-</i> “we” (excl.) <i>*nām : *nam-</i> “we”
2	<i>*nīn : *nin-</i> “you”	<i>*nīm : *nim-</i> “you”
3	<i>*tān : *tan-</i> “he, she, it”	<i>*tām : *tam-</i> “they”

McAlpin (1981:112) begins his discussion of pronouns by making some very important observations regarding the relationship of the Elamite and Dravidian pronouns:

530.0 The personal pronouns have long been an enigma in the relationship of Elamite to Dravidian. On the one hand, the second person pronouns provided the morphological detail first recognized as being cognate... On the other hand, one of them, the first person plural is still somewhat ambiguous as to its form in PED. For the others, it has been a long quest, fitting together the morphological pieces. The major breakthrough came with the realization that the Proto-Dravidian pronouns were not ultimately archaic, but rather a major innovation in late Pre-Dravidian. The nature of the innovation was the replacement of the nominative by oblique stems. Thus, Proto-Dravidian pronouns have little to say directly about the morphology of nominative bases in PED. However, the same forms, in a different usage, were preserved as personal possessive prefixes in kinship terminology. This was maintained as a system for a few kin terms in Old Tamil and sporadically in many other Dravidian languages. Thus, Dravidian does attest the PED system, but not directly in the paradigm.

McAlpin (1981:112—117) reconstructs the following personal pronoun stems for Proto-Elamo-Dravidian:

	Singular	Plural
1	* <i>i</i>	* <i>nəNKə</i>
2	* <i>ni</i>	* <i>nim</i>
3 resumptive	* <i>ta(n)</i>	
reflexive	* <i>i</i>	

The 1st person singular is to be derived from Proto-Nostratic \**ʔiya* 1st person personal pronoun stem (postnominal possessive/preverbal agentive) found also in Afroasiatic (cf. Bomhard—Kerns 1984:597—598, no. 470; Dolgopolsky 1984:72, 83, 85—86, 96, and 99—100), while the 3rd person stem \**ta(n)* is to be derived from the wide-spread Nostratic demonstrative stem \**t[h]a-/t[h]ə-* “this” (cf. Bomhard—Kerns 1984:287—289, no. 103), and the Proto-Dravidian 1st plural (exclusive) stem \**nām* : \**nam-* “we” is to be derived from the Proto-Nostratic 1st person personal pronoun stem \**na-/nə-* (cf. Bomhard—Kerns 1984:683—684, no. 564; Dolgopolsky 1984:90—91) — this stem may also be the source of the Sumerian 1st person pronoun *ĝá-* /*ŋa-*, but this is uncertain.

To conclude, there is much in Sumerian that points to it being a Nostratic language — we have only scratched the surface in this brief summary (for more detailed information, see the papers by Boisson cited in the references). However, there are also many problems that must still be solved regarding the exact nature of that relationship.

#### 7.4. Concluding Remarks / Future Prospects

In this book, we have surveyed the evidence for setting up a Nostratic macrofamily, paying particular attention to Indo-European and how it fits into the overall picture. We have also discussed several problem areas. The evidence continues to accumulate to support the Nostratic Hypothesis, and the evidence is massive and persuasive.

As the twentieth century draws to a close, it is simply no longer reasonable to hold to the view that Indo-European is a language isolate — thirty years have already passed since Vladislav M. Illič-Svityč and Aaron B. Dolgopolsky successfully demonstrated that Indo-European is related to a several other language families of northern and central Eurasia and the ancient Near East. Since then, not only has this work been continued by the Russians, it has also been taken up by a number of other scholars in other countries, who have verified the initial results arrived at by the Russians, who have refined the methodology, who have greatly expanded the number of cognate sets, who have clarified issues related to phonology, who have identified additional grammatical formants and have begun to piece together the early development of morphology in each of the daughter languages, and who have made great strides in problems of subgrouping. We have touched upon some of these areas in this book.

This does not mean that all of the work has been done, however. As shown by the problem areas listed in this book (and there are many, many others), much work still needs to be done, not only at the level of Proto-Nostratic itself but also within each of the daughter

languages. The future prospects are extremely encouraging — enough solid results have already been achieved to lay the foundation for future research, and, to make matters even more promising, advances in one area will impact other areas as well. The days are past when scholars could work on problem areas in one language family without regard to work being done in other language families. Indo-European has relatives, and these must now be taken into consideration.

## Common Nostratic Roots

### 8.1. Common Nostratic Roots

In this chapter, all of the common Nostratic roots discussed in detail in my 1994 joint monograph *The Nostratic Macrofamily: A Study in Distant Linguistic Relationship* are listed exactly as they appear in that book, except that Proto-Eskimo forms have been added, as have several additional Sumerian cognates. Corrections and new cognate sets appear at the end.

In the reconstruction of the Proto-Nostratic roots in this chapter, I mostly only give verbal meanings. However, it must be understood that in the vast majority of cases, these roots can also serve as nominal stems. Those roots that are exclusively nominal are indicated as such by their meanings.

The following abbreviations will be used: PN = Proto-Nostratic; PIE = Proto-Indo-European; PK = Proto-Kartvelian; PAA = Proto-Afroasiatic; PS = Proto-Semitic; PEC = Proto-East Cushitic; PHEC = Proto-Highland East Cushitic; PSC = Proto-Southern Cushitic; PC = Proto-Chadic; PU = Proto-Uralic; PFU = Proto-Finno-Ugrian; PFP = Proto-Finno-Permian; PED = Proto-Elamo-Dravidian; PD = Proto-Dravidian; PA = Proto-Altaic; CM = Common Mongolian; PT = Proto-Turkic; CT = Common Turkic; S = Sumerian; PE = Proto-Eskimo; PY = Proto-Yupik; PI = Proto-Inuit. Other language names will be spelled out in full.

Note: since it is often difficult to determine the quality of certain vowels in Proto-Uralic and Proto-Finno-Ugrian, the following cover symbol will be used:  $\mathfrak{a}$  = any vowel.

1. PN *\*baw-/baw-* “to be or become aware of or acquainted with, to notice, to observe” > PIE *\*b[h]ew-d[h]-/\*b[h]ow-d[h]-/\*b[h]u-d[h]-* “to be or become aware of”; PAA *\*baw-/baw-* “to be or become aware of”; S *bu-i* (rare) “knowledge, learning”.
2. PN *\*bur-/bor-* “to bore, to pierce” > PIE *\*b[h]or-/b[h]r-* “to bore, to pierce”; PAA *\*bar-/bār-* “to bore, to pierce”; PU *\*pura* “borer, auger”; PD *\*pur-* “to bore, to perforate; borer, gimlet”; PA *\*bur-* “to bore through, to pierce”; S *būr* “to bore through, to pierce”.
3. PN *\*bur-/bor-* “to strike, to hit, to beat, to strike down, to strike to pieces, to smash” > PIE *\*b[h]er-/b[h]or-/b[h]r-* “to strike, to fight”; PK *\*bṛg-* “to struggle, to fight”; PAA *\*bar-/bār-* “to strike, to fight”; PD *\*por-* “to fight, to engage in battle; fight, battle, war, quarrel”; Altaic: Mongolian *burči-* “to raze, to destroy, to break, to crush”; S *bur* “to destroy, to exterminate, to eradicate; to tear out, to pull out, to remove”, *bur* “to cut, to cut to pieces”,

*būr* “to demolish, to tear down, to destroy”, *būr* “to cut open, to cut into; slain, killed”, *būr* (-*būr*) “to rend, to split, to slit, to cleave, to slash”.

4. PN *\*bar-/bār-* “to swell, to puff up, to expand” > PIE *\*b<sup>h</sup>er-/b<sup>h</sup>or-/b<sup>h</sup>ǵ-* (also *\*b<sup>h</sup>jar-*) “to swell, to puff up, to expand, to bristle”, *\*b<sup>h</sup>ǵst<sup>h</sup>-i-s* “bristle, point”, *\*b<sup>h</sup>rews-/b<sup>h</sup>rows-/b<sup>h</sup>rus-* “to swell; swelling”, *\*b<sup>h</sup>erw-/b<sup>h</sup>orw-/b<sup>h</sup>ǵw-*, *\*b<sup>h</sup>rew-/b<sup>h</sup>row-/b<sup>h</sup>ru-* “to bubble up, to boil”, *\*b<sup>h</sup>jard<sup>h</sup>jeA* (> *\*b<sup>h</sup>jard<sup>h</sup>jā*) “beard”, *\*b<sup>h</sup>rend<sup>h</sup>-/b<sup>h</sup>rond<sup>h</sup>-/b<sup>h</sup>rǵd<sup>h</sup>-* “to swell up”, *\*b<sup>h</sup>rew-/b<sup>h</sup>ru-* “to sprout, to swell”; PK *\*ber-* “to blow, to inflate, to puff out”; PAA *\*bar-/bār-* “to swell, to puff up, to expand”; PD *\*par-* “to swell, to grow, to expand”; S *bar* “to blow, to stretch or spread out, to ferment, to blow away”, *bār* “to spread or stretch out, to lay out”, *bāra* “to spread or stretch out”, *bara* “to spread or stretch out, to open wide”, *bar<sub>7</sub>* “to blow at or upon”.
5. PN *\*bar-/bār-* “projection, bristle, point” (derivative of the preceding) > PIE *\*b<sup>h</sup>jar-* (also *\*b<sup>h</sup>or-*) “projection, bristle, point”; PAA *\*bār-* “cypress, pine, fir”.
6. PN *\*bar-/bār-* “to bear, to bring, to carry” > PIE *\*b<sup>h</sup>er-/b<sup>h</sup>or-/b<sup>h</sup>ǵ-* “to bear, to carry, to bring forth”; PAA *\*bar-/bār-* “to bear, to carry, to bring forth”; PED *\*par* “child, young one”; S *bar* “origin, descent ancestry; family, descendants, offspring”.
7. PN *\*bar-/bār-* “to twist, to turn” > PIE *\*b<sup>h</sup>er-/b<sup>h</sup>or-/b<sup>h</sup>ǵ-* “to plait, to weave”; Kartvelian: Georgian *br-un-va* “to turn, to twist”, *bor-b-ali* “wheel, potter’s wheel”, *bru* “dizziness” in *tav-bru* “dizziness in the head”; PAA *\*bar-/bār-* “to twist, to twine, to weave”; S *bar* “to twist, to twist around, to twist off”, *bar* “to bind, to tie up, to fasten”, *bar-bar-re* “bond, fetter”; PE *\*pārə-* “to bend”, *\*pārət-* “to bend (trans.)”.
8. PN *\*buw-/bōw-* “to go, to come, to proceed, to spend (time)” > PIE *\*b<sup>h</sup>ewH-/b<sup>h</sup>owH-/b<sup>h</sup>juH-* (> *\*b<sup>h</sup>jū-*) “to spend (time), to abide, to dwell”; PAA *\*baw-/bāw-* “to come, to go (in), to enter”; PD *\*pō-* “to go, to proceed, to go away, to reach a destination; to spend time; to pass away”; S *BU* “to reach or arrive at a destination; to come upon, to meet, to encounter”.
9. PN *\*buw-/bōw-* “to become, to arise, to come into being, to grow” > PIE *\*b<sup>h</sup>ewH-/b<sup>h</sup>owH-/b<sup>h</sup>juH-* (> *\*b<sup>h</sup>jū-*) “to become, to arise, to come into being, to grow”; PAA *\*baw-/bāw-* “to be or become full, filled; to become large”; PU *\*puwa* “tree, wood”; PD *\*pū-* “to bloom, to blossom, to flower, to flourish”; PA *\*būi-* “to become, to arise, to come into being, to increase, to grow”; PE *\*puvə-* “to swell”; PI *\*puvala-* “to be fat”, *\*puvliq-* “to swell, up” (these forms either belong here or with no. 34 below).

10. PN *\*bul-/bol-* “to swell, to expand, to spread out, to overflow, to puff up, to inflate” > PIE *\*b<sup>h</sup>]el-/b<sup>h</sup>]ol-/b<sup>h</sup>]l-* “to swell, to puff up, to inflate, to expand, to bubble up, to overflow”; Kartvelian: Georgian *\*blom-* “multitude” in *blomad* “in a crowd, mass, mob, multitude”; PAA *\*bal-/bəl-* “to swell, to expand, to spread out, to overflow”; S *bul* “to blow, to breathe, to puff”.
11. PN *\*bul-uʃ-/bol-uʃ-* “to ripen, to blossom, to bloom, to sprout, to mature” (extended form of the preceding) > PIE *\*b<sup>h</sup>]ulʰi-/b<sup>h</sup>]olʰi-, \*b<sup>h</sup>]loʰi-* (> *\*b<sup>h</sup>]lō-*; later also *\*b<sup>h</sup>]lē-*) “to blossom, to sprout”; PAA *\*balaʃ-/bəlaʃ-/baləʃ-/bələʃ-* “to grow, to mature”; PD *\*pol-* “to increase, to flourish, to prosper, to abound”; PA *\*bōl-* “to become”; S *buluḡ₃* “to grow, to make grow”.
12. PN *\*bul-/bol-* “to mix, to mix up, to confuse” > PIE *\*b<sup>h</sup>]lend<sup>h</sup>]/b<sup>h</sup>]lond<sup>h</sup>]/b<sup>h</sup>]lṇd<sup>h</sup>]* “to mix, to blend”; PAA *\*bal-/bəl-* “to mix, to mix up, to confuse”; PA *\*bul-* “to mix, to mix up, to confuse”.
13. PN *\*bal-/bəl-* “to be or become dark, obscure, blind” > PIE *\*b<sup>h</sup>]lend<sup>h</sup>]/b<sup>h</sup>]lond<sup>h</sup>]/b<sup>h</sup>]lṇd<sup>h</sup>]* “to make blind, to blind”; PAA *\*bal-/bəl-* “to be blind”; Altaic: Mongolian *balai* “dark, obscure, ignorant; intellectually or morally blind; stupid”, *balar* “dark, obscure, blind, unclear, ignorant; primitive, primeval; thick, dense, impenetrable”; Manchu *balu* “blind”.
14. PN *\*bul-/bol-* “to become worn out, weak, tired, old” > PIE *\*b<sup>h</sup>]ol-* “worn out, weak; misfortune, calamity”; PAA *\*bal-/bəl-* “to become worn out”; PD *\*pul-* “to wither, to fade, to become weak, to decrease”.
15. PN *\*balv-/bəlv-* “to shine, to be bright” > PIE *\*b<sup>h</sup>]el-/b<sup>h</sup>]ol-* “shining, white”, *\*b<sup>h</sup>]les-/b<sup>h</sup>]los-* “to shine”, *\*b<sup>h</sup>]liyC-/b<sup>h</sup>]leyC-* (> *\*b<sup>h</sup>]lī-/b<sup>h</sup>]lē-*), *\*b<sup>h</sup>]liyV-/b<sup>h</sup>]leyV-* “to shine”, *\*b<sup>h</sup>]lu-, \*b<sup>h</sup>]luH-* (> *\*b<sup>h</sup>]lū-*) “to shine”, *\*b<sup>h</sup>]elk’-/b<sup>h</sup>]olk’-/b<sup>h</sup>]lk’-, \*b<sup>h</sup>]lek’-/b<sup>h</sup>]lok’-* “to shine”; PAA *\*bal-/bəl-* “to shine, to be bright”; PD *\*pal-* “to glitter, to shine”.
16. PN *\*bar-/bər-* “to shine, to be bright” > PIE *\*b<sup>h</sup>]erEk’-, \*b<sup>h</sup>]reEk’-* (> *\*b<sup>h</sup>]rēk’-*) “to shine, to gleam, to be bright”; PK *\*berc’q’-/brc’q’-* “to shine”; PAA *\*bar-/bər-* “to shine, to be bright”; PD *\*par-* “to shine (brightly), to become dawn”; S *bar* “to shine, to light, to illuminate, to sparkle, to glitter, to glisten; bright, shining; light, brightness”, *bar₆-bar₆* “light, white; to whiten, to make white”.

17. PN *\*bar-/bār-* “to be kind, charitable, beneficent, to do good” > PIE *\*b<sup>h</sup>er-/b<sup>h</sup>or-/b<sup>h</sup>̥-* “to be kind, charitable, beneficent; to do good”; PAA *\*bar-/bār-* “to be kind, charitable, beneficent, to do good”; PFU *\*para* “good”.
18. PN *\*bad-/bād-* “to split, to cleave, to separate, to divide” > PIE *\*b<sup>h</sup>ed<sup>h</sup>-/b<sup>h</sup>od<sup>h</sup>̥-* “to prick, to pierce, to dig”; PAA *\*bad-/bād-* “to split, to cleave, to separate”; PD *\*paṭ-* “to break (intr.), to break out, to smash, to split”; S *bad-du* “to separate, to divide, to part”, *bad*, “to divide, to separate”; PE *\*paḍā* “opening or entrance”.
19. PN *\*bur-gʷ-/bor-gʷ-* “to protrude, to be prominent” > PIE *\*b<sup>h</sup>erg<sup>h</sup>̥-/b<sup>h</sup>org<sup>h</sup>̥-/b<sup>h</sup>̥rg<sup>h</sup>̥-* “high; mountain, hill”; PK *\*bṛg-* “strong, powerful, high, large”; PAA *\*baragʷ-/barəgʷ-/bārəgʷ-* “to protrude, to stand out”; PD *\*por-* “mountain, hill, top”; PA *\*burga(n)* “(wooded) mountain, (wooded) pasture, promontory”.
20. PN *\*bah-/bāh-* “to shine” > PIE *\*b<sup>h</sup>eh- (\*[b<sup>h</sup>ah-])/\*b<sup>h</sup>oh- (> \*b<sup>h</sup>ā-/b<sup>h</sup>ō-)* “to shine”; PAA *\*bah-/bāh-* “to shine”.
21. PN *\*bah-/bāh-* “to say, to speak” > PIE *\*b<sup>h</sup>eh- (\*[b<sup>h</sup>ah-]) (> \*b<sup>h</sup>ā-)* “to say, to speak”; PAA *\*bah-/bāh-* “to say, to speak”.
22. PN *\*bak’-/bək’-* “to cleave, to split, to break open” > PIE *\*b<sup>h</sup>ek’-/b<sup>h</sup>ok’-* “to cut or split apart, to break apart”, *\*b<sup>h</sup>ak’-* “to divide, to distribute”; PAA *\*bak’-/bək’-* “to cleave, to split, to break open”; PFU *\*pakka-* “to burst, to rend, to split”; PD *\*pak-* “to split, to break, to divide, to separate; to be split, divided”; PI *\*pakak-* “to knock into” (cf. West Canadian Inuit [Siglit] *pakaq-* “to knock against and break”).
23. PN *\*bi/\*be* “in addition to, with, together with” > PIE *\*(-)b<sup>h</sup>i/y-, \*-b<sup>h</sup>o-* “in, with, among”; PAA *\*ba/\*bā* “in, with, within, among”; S *bi* “with, together with, in addition to”, *-bi, bi-da, -bi-(da)* “and”.
24. PN *\*bar-/bār-* “seed, grain” > PIE *\*b<sup>h</sup>ars-* “grain”; PAA *\*bar-/bār-* “grain, cereal”; PD *\*par-* “grain, seed, pebble”; S *bar* “seed”.
25. PN *\*bay-/bāy-* “to apportion, to divide into shares, to distribute, to allot” > PIE *\*b<sup>h</sup>ey-/b<sup>h</sup>̥oy-* “to give” (found only in Anatolian); PAA *\*bay-/bāy-* “to apportion, to separate into equal parts, to distribute into shares”; PA *\*bāya(n)* “rich”; S *ba* “to give as a gift or ration”; PE *\*payuγ-* “to bring food or supplies to” (cf. East Canadian Inuit *payuk-* “to bring a gift to”; West Canadian Inuit *payuk-* “to give food, clothing to those remaining”).



26. PN *\*bany-/bəny-* “to join together, to fit together, to fasten, to twist together, to form or produce in any way” > PIE *\*b<sup>h</sup>jen-d<sup>h</sup>]/-/\*b<sup>h</sup>jon-d<sup>h</sup>]/-/\*b<sup>h</sup>jē-d<sup>h</sup>]/-* “to join together, to fit together, to fasten, to twist together, to form or produce in any way”; PAA *\*ban-/bən-* “to join together, to fit together, to fasten, to twist together, to form or produce in any way”; PD *\*pan-* “service, work, business; act, action; to make, to produce, to build”.
27. PN *\*bay-/bəy-* “bee, honey” > PIE *\*b<sup>h</sup>ji-* “bee”; Afroasiatic: Egyptian *bi-t*, *by-t* “bee, honey”.
28. PN *\*bun-/bon-* “to puff up, to inflate, to expand, to make to swell”; (extended form) *\*bun-g-/bon-g-* “to swell, to fatten, to increase, to expand” > PIE *\*b<sup>h</sup>jeng<sup>h</sup>]/-/\*b<sup>h</sup>jong<sup>h</sup>]/-/\*b<sup>h</sup>jŋg<sup>h</sup>]/-* “to swell, to fatten, to grow, to increase”, *\*b<sup>h</sup>jŋg<sup>h</sup>ju-* “fat, swollen, thick”; PFU *\*puŋka*, *\*poŋka* “rounded protuberance, lump”; PD *\*poŋk-* “to increase, to swell, to expand”; S *bun* “to blow, to inflate; breath”.
29. PN *\*bury-/bory-* “dark-colored” > PIE *\*b<sup>h</sup>jer-*, *\*b<sup>h</sup>ru-* “brown”; Afroasiatic: PEC *\*boʔr-* (< *\*borʔ-*) “yellow, brown, red, dark-colored”; PA *\*bory-* “gray, brown” (< “dark-colored”).
30. PN *\*bur-/bor-* “to cover, to enclose, to wrap up” > PK *\*bur-* “to cover, to enclose”; PD *\*pōr-* “to wrap around (the body), to cover, to enclose; a cover, covering, wrapping”; PA *\*büri-* “to cover, to enclose”.
31. PN *\*bur-/bor-* “to whirl, to rage, to palpitate” > PIE *\*b<sup>h</sup>jur-/b<sup>h</sup>]/-* “to move rapidly, to rage, to quiver, to palpitate”; PU *\*purka* “snowstorm, drifting of snow”; PA *\*bur-* “to whirl, to rage; storm, snowstorm”.
32. PN *\*bar-/bər-* “to scrape, to cut, to carve, to whittle, to trim” > PIE *\*b<sup>h</sup>jord<sup>h</sup>]/-/\*b<sup>h</sup>jrd<sup>h</sup>]/-/\*b<sup>h</sup>red<sup>h</sup>]/-* “(piece) cut off”; PAA *\*bar-/bər-* “to scrape, to cut, to carve”; PU *\*para-* “to scrape, to cut, to carve”; S *bar* “to split (with a tool or weapon)”, *bar* “to cut into, to notch, to cut or slit open, to carve, to slice, to cut up”, *bar* “to dig, to excavate”.
33. PN *\*bar-/bər-* “to make a sound, to utter a noise” > PIE *\*b<sup>h</sup>jer-/b<sup>h</sup>]/-/\*b<sup>h</sup>jē-/b<sup>h</sup>]/-* “to make a sound, to hum, to buzz, to mutter”, *\*b<sup>h</sup>jerk’-/b<sup>h</sup>jork’-/b<sup>h</sup>jrk’-* “to drone, to bark”, *\*b<sup>h</sup>jerk<sup>h</sup>]/-* “to yelp, to roar, to buzz, to sing”, *\*b<sup>h</sup>jerm-/b<sup>h</sup>jorm-/b<sup>h</sup>jŋm-*, *\*b<sup>h</sup>rem-/b<sup>h</sup>jrom-* “to buzz, to hum, to make a sound”; PK *\*br-* “to sing”; PD *\*paɹ-* “to speak, to say, to mutter”, *\*park-* “to snore”.
34. PN *\*p<sup>h</sup>uw-/p<sup>h</sup>jow-* “to puff, to blow, to exhale; to puff up, to inflate” > PIE *\*p<sup>h</sup>jū-* “to puff, to puff up, to blow”; PK *\*p<sup>h</sup>ju-* “to swell, to puff up, to inflate”; PAA *\*p<sup>h</sup>aw-*

- /\*p<sup>h</sup>]əw-* “to puff, to blow, to exhale”; PU *\*puwa-* “to blow”; PD *\*pū-* “to fart”; PE *\*puvə-* “to swell”; PI *\*puvala-* “to be fat”, *\*puvliq-* “to swell, up” (these forms either belong here or with no. 9 above).
35. PN *\*p<sup>h</sup>]ilʷ-/ \*p<sup>h</sup>]elʷ-* “to split, to cleave” > PIE *\*p<sup>h</sup>]el-/ \*p<sup>h</sup>]ol-/ \*p<sup>h</sup>]l-* (*\*p<sup>h</sup>]l-ey-/ \*p<sup>h</sup>]l-loy-*; *\*p<sup>h</sup>]l-iyC-/ \*p<sup>h</sup>]l-eyC-* > *\*p<sup>h</sup>]līC-/ \*p<sup>h</sup>]lēC-*) “to split, to cleave”; PAA *\*p<sup>h</sup>]al-/ \*p<sup>h</sup>]əl-* “to split, to cleave”; PU *\*pilʷə-* “to cleave, to split”; PD *\*pil-* “to cleave asunder, to divide, to crush; to be split, cleaved, rent, cracked; to cleave, to rend, to part asunder”; PE *\*pilay-* “to butcher”, *\*pilaytur-* “to cut up”.
36. PN *\*p<sup>h</sup>]al-/ \*p<sup>h</sup>]əl-* “stone” > PIE *\*p<sup>h</sup>]els-/ \*p<sup>h</sup>]ols-/ \*p<sup>h</sup>]ls-* “stone”; PAA *\*p<sup>h</sup>]al-/ \*p<sup>h</sup>]əl-* “stone”.
37. PN *\*p<sup>h</sup>]ar-/ \*p<sup>h</sup>]ər-* “to separate, to divide” > PIE *\*p<sup>h</sup>]er-/ \*p<sup>h</sup>]or-/ \*p<sup>h</sup>]r-* “to separate, to divide”; PK *\*p<sup>h</sup>]ric-* “to tear, to rend, to break or burst apart”; PAA *\*p<sup>h</sup>]ar-/ \*p<sup>h</sup>]ər-* “to separate, to divide”; PD *\*par-* “to separate, to cut asunder, to break off, to rend, to tear off”, *\*pir-* “to separate, to part, to sever”.
38. PN *\*p<sup>h</sup>]at<sup>h</sup>]-/ \*p<sup>h</sup>]ət<sup>h</sup>]l-* “to open; to be open, wide, spacious” > PIE *\*p<sup>h</sup>]et<sup>h</sup>]l-/ \*p<sup>h</sup>]ot<sup>h</sup>]l-* “to open, to be open”; PAA *\*p<sup>h</sup>]at<sup>h</sup>]l-/ \*p<sup>h</sup>]ət<sup>h</sup>]l-* “to open; to be open, wide, spacious”.
39. PN *\*p<sup>h</sup>]ir-/ \*p<sup>h</sup>]er-* “to bring forth, to bear fruit” > PIE *\*p<sup>h</sup>]er-/ \*p<sup>h</sup>]r-* “to bear, to bring forth”; PAA *\*p<sup>h</sup>]ar-/ \*p<sup>h</sup>]ər-* “to bring forth, to bear fruit”; PD *\*per-* “to get, to beget, to bear”; PA *\*püre* “seed, fruit; result, offspring”.
40. PN *\*p<sup>h</sup>]aʔ-/ \*p<sup>h</sup>]əʔ-* “to swell, to fatten” > PIE *\*p<sup>h</sup>]eʔyV-/ \*p<sup>h</sup>]oʔyV-/ \*p<sup>h</sup>]əʔyV-* > (with metathesis) *\*p<sup>h</sup>]eyʔV-/ \*p<sup>h</sup>]oyʔV-/ \*p<sup>h</sup>]əyʔV-* > (with loss of the laryngeal) *\*p<sup>h</sup>]eyV-/ \*p<sup>h</sup>]oyV-/ \*p<sup>h</sup>]iyV-* (and, later, analogical *\*p<sup>h</sup>]eyC-/ \*p<sup>h</sup>]oyC-/ \*p<sup>h</sup>]iyC-* [> *\*p<sup>h</sup>]iC-*]) “to swell, to fatten”; *\*p<sup>h</sup>]oʔiC-* > (with syncope of *\*i*) *\*p<sup>h</sup>]oʔC-* > (with loss of the laryngeal) *\*p<sup>h</sup>]ōC-* (note 3rd sg. *\*p<sup>h</sup>]i- \*p<sup>h</sup>]ʔ-et<sup>h</sup>]i* > Sanskrit *pībati* “drinks, swallows”); *\*p<sup>h</sup>]oʔyV-/ \*p<sup>h</sup>]əʔyV-* > (with metathesis) *\*p<sup>h</sup>]oyʔV-/ \*p<sup>h</sup>]əyʔV-* > (with loss of the laryngeal) *\*p<sup>h</sup>]oyV-/ \*p<sup>h</sup>]iyV-* (and, later, analogical *\*p<sup>h</sup>]oyC-/ \*p<sup>h</sup>]iyC-* [> *\*p<sup>h</sup>]iC-*]) “to drink, to swallow”; PAA *\*p<sup>h</sup>]aʔ-/ \*p<sup>h</sup>]əʔ-* “to swell, to fatten”; PD *\*pācci* “milk, mother’s milk”, *\*pāl* “milk”, *\*pār-* “to grow, to become (in compounds)”.
41. PN *\*p<sup>h</sup>]ar-/ \*p<sup>h</sup>]ər-* “to precede, to surpass, to outstrip, to overtake” > PIE *\*p<sup>h</sup>]er-/ \*p<sup>h</sup>]or-/ \*p<sup>h</sup>]r-* “preceding, surpassing” (used as the base of prepositions and preverbs and a

wide range of extended meanings); PAA *\*p<sup>h</sup>]ar-/p<sup>h</sup>]ər-* “to precede, to surpass, to outstrip”.

42. PN *\*p<sup>h</sup>]asʷ-/p<sup>h</sup>]əsʷ-* “to breathe out, to blow, to fart” > PIE *\*p<sup>h</sup>]est’-/p<sup>h</sup>]ost’-* “to fart”, *\*p<sup>h</sup>]es-/p<sup>h</sup>]os-* “to blow”; PAA *\*p<sup>h</sup>]asʷ-/p<sup>h</sup>]əsʷ-* “to breathe out, to blow, to fart”; S *peš, pešs, pešs* “to breathe, to respire; to breathe a sigh of relief; to blow”.
43. PN *\*p<sup>h</sup>]aɸ-w-/p<sup>h</sup>]əɸ-w-* “fire, flame, spark; to warm, to heat” > PIE *\*p<sup>h</sup>]əḡw/u-r/n-* “fire”; PK *\*p<sup>h</sup>]x(w)-* “warm”; Afroasiatic: Egyptian *p’w* “flames, fire”; PU *\*pāwā* “warm; to heat, to warm”; PD *\*pū-* “spark; ember, burning coal”; (?) Altaic: CM *\*pe-* “to be dried in the sunshine, to warm oneself”.
44. PN *\*p<sup>h</sup>]at’-/p<sup>h</sup>]ət’-* “to hasten, to move quickly; foot” > PIE *\*p<sup>h</sup>]et’-/p<sup>h</sup>]ot’-* “foot”; PAA *\*p<sup>h</sup>]at’-/p<sup>h</sup>]ət’-* “to hasten, to move quickly; foot”; PA *\*padak* “foot, end”.
45. PN *\*p<sup>h</sup>]at<sup>h</sup>’-/p<sup>h</sup>]ət<sup>h</sup>’-* “to flutter, to quiver, to tremble, to palpitate, to move rapidly” > PIE *\*p<sup>h</sup>]et<sup>h</sup>’-/p<sup>h</sup>]ot<sup>h</sup>’-* “to fly, to rush, to pursue; to fall, to fall down”; PK *\*p<sup>h</sup>]et<sup>h</sup>]k<sup>h</sup>’-* “to quiver, to tremble, to vibrate, to explode”; PAA *\*p<sup>h</sup>]at<sup>h</sup>’-/p<sup>h</sup>]ət<sup>h</sup>’-* “to rush, to hurry, to go rapidly; to fall down”; PD *\*pat-* “to hurry; to flutter, to quiver, to shake; to be flurried, impatient, overhasty”.
46. PN *\*p<sup>h</sup>]ar-/p<sup>h</sup>]ər-* “to spread, to scatter” > PIE *\*p<sup>h</sup>]er-/p<sup>h</sup>]or-* “to spray, to spread, to scatter” (extended forms *\*p<sup>h</sup>]r-eE-* [> *\*p<sup>h</sup>]r-ē-*], *\*p<sup>h</sup>]r-ew-/p<sup>h</sup>]r-ow-/p<sup>h</sup>]r-u-*); PAA *\*p<sup>h</sup>]ar-/p<sup>h</sup>]ər-* “to spread, to scatter”; PD *\*par-* “to spread”; S *pār* “to spread or stretch out”.
47. PN *\*p<sup>h</sup>]ar-/p<sup>h</sup>]ər-* “to move swiftly, to hasten, to be in a hurry, to be greatly agitated; to fly, to flee” > PIE *\*p<sup>h</sup>]er-/p<sup>h</sup>]or-/p<sup>h</sup>]r-* “to fly, to flee”; PK *\*p<sup>h</sup>]r-in-* “to fly”; PAA *\*p<sup>h</sup>]ar-/p<sup>h</sup>]ər-* “to fly, to flee”; PD *\*par-* “to fly, to flee; to hasten, to hurry”, PD *\*par-* “to run, to flow, to move quickly”; PI *\*parla-* “to hurry eagerly towards”.
48. PN *\*p<sup>h</sup>]al-/p<sup>h</sup>]əl-* “flat, level, broad” > PIE *\*p<sup>h</sup>]el-/p<sup>h</sup>]ol-/p<sup>h</sup>]l-* (extended forms *\*p<sup>h</sup>]elḡh-*, *\*p<sup>h</sup>]leḡh-* [> *\*p<sup>h</sup>]lā-*], *\*p<sup>h</sup>]lḡh-*) “even, level, flat, wide, broad”; PAA *\*p<sup>h</sup>]al-/p<sup>h</sup>]əl-* “flat, level, broad”.
49. PN *\*p<sup>h</sup>]al-/p<sup>h</sup>]əl-* “flat of the hand, palm” (derivative of the preceding) > PIE *\*p<sup>h</sup>]lḡh-meA* [*\*p<sup>h</sup>]lḡh-maA*] “palm of the hand”; PA *\*pala* “palm of the hand”.

50. PN *\*p<sup>h</sup>jur-/p<sup>h</sup>lor-* “calf, heifer” > PIE *\*p<sup>h</sup>lor-/p<sup>h</sup>l̥-* “young bull or calf”; PK *\*p<sup>h</sup>jur-* “cow”; PAA *\*p<sup>h</sup>jar-/p<sup>h</sup>ər-* “young bull or calf”; PD *\*pōr-* “bull calf, bullock”.
51. PN *\*p<sup>h</sup>asv-/p<sup>h</sup>əsv-* “to split, to cleave, to break, to shatter” > PK *\*p<sup>h</sup>ješ-* (“to burst, to break” >) “to explode (noisily)”; PAA *\*p<sup>h</sup>asv-/p<sup>h</sup>əsv-* “to split, to cleave, to sever”; PU *\*pasva* “to break, to shatter; to tear, to split”; PD *\*pā(y)-/pac-* “to divide, to separate, to distribute”; S *peš*, “to break, to smash, to shatter”; (?) PY (Sirenikski) *\*pasi-* “to smash or hit”.
52. PN *\*p<sup>h</sup>aḥ-/p<sup>h</sup>əḥ-* “to eat” > PIE *\*p<sup>h</sup>jeḥh-* [*\*p<sup>h</sup>aḥh-/p<sup>h</sup>oḥh-* > (*\*p<sup>h</sup>ā-/p<sup>h</sup>ō-*) “to feed”]; PAA *\*p<sup>h</sup>aḥ-/p<sup>h</sup>əḥ-* “to eat”.
53. PN *\*p<sup>h</sup>jul-/p<sup>h</sup>ol-* verbal stem indicating downward motion: “to fall, to fall down” > PIE *\*p<sup>h</sup>jol-* “to fall, to fall down”; PAA *\*p<sup>h</sup>jal-/p<sup>h</sup>əl-* verbal stem indicating downward motion: “to fall, to fall down, to fall to the ground; to set (sun), to grow dark”.
54. PN *\*p<sup>h</sup>jal-/p<sup>h</sup>əl-* “to fill” > PIE *\*p<sup>h</sup>jel̥-/p<sup>h</sup>ol̥-/p<sup>h</sup>l̥-*, *\*p<sup>h</sup>le̥-/p<sup>h</sup>lo̥-* (> *\*p<sup>h</sup>l̥-/p<sup>h</sup>ō-*) “to fill”; PU *\*palya* “much”; PD *\*pala* “many, much, several”; PA *\*püle* “to be enough, to be superfluous”.
55. PN *\*p<sup>h</sup>jal-/p<sup>h</sup>əl-* “settlement, settled place” > PIE *\*p<sup>h</sup>l̥H-* “citadel, fortified high place”; PPU *\*palγə* “village, dwelling-place”; PD *\*palli* “settlement, hamlet, village”; PA *\*palaga* “city, town, village”.
56. PN *\*p<sup>h</sup>jal-/p<sup>h</sup>əl-* “thumb” > PIE *\*p<sup>h</sup>ol-* “thumb”; PU *\*pālkā* “thumb”.
57. PN *\*p<sup>h</sup>id-/p<sup>h</sup>ed-* “to seize, to hold, to clutch, to capture, to cling to” > PAA *\*p<sup>h</sup>ad-/p<sup>h</sup>əd-* “to snatch away, to recover, to get back, to rescue”; PPU *\*pitā-* “to seize, to hold, to grasp, to cling to”; PD *\*piṭi* “to catch, to grasp, to seize, to snatch to capture”.
58. PN *\*p<sup>h</sup>iny-/p<sup>h</sup>eny-* “to watch (over), to protect, to nourish, to nurture” > PIE *\*p<sup>h</sup>en-* “food, protection”; PU *\*punva-* “to watch (over), to protect, to preserve, to keep”; PD *\*pēṇ-* “protection; to protect, to take care of”.
59. PN *\*p<sup>h</sup>jal-/p<sup>h</sup>əl-* “to cover, to hide, to conceal” > PIE *\*p<sup>h</sup>el-/p<sup>h</sup>ol-/p<sup>h</sup>l̥-* “to cover, to hide, to conceal”; PK *\*p<sup>h</sup>jal-* “to hide, to conceal”; S *pāla* “clothes, clothing (of a god or king)”.

60. PN *\*p<sup>h</sup>]al-/p<sup>h</sup>]əl-* (“covering” >) “skin, hide” (derivative of the preceding) > PIE *\*p<sup>h</sup>]el-* “skin, hide”; Afroasiatic: PSC *\*fal-* or *\*faal-* “skin, hide, rash”.
61. PN *\*p<sup>h</sup>]ir-/p<sup>h</sup>]er-* (?) “house” > Indo-European: Hittite (nom.-acc. sg.) *pi-ir* “house”, Hieroglyphic Luwian *parn-* “house”; Afroasiatic: Egyptian *pr* “house”; PD *\*puray* “house, dwelling”.
62. PN *\*p<sup>h</sup>]asʷ-/p<sup>h</sup>]əsʷ-* “to squirt out, to ejaculate; penis” > PIE *\*p<sup>h</sup>]es-/p<sup>h</sup>]os-* “penis”; PFU *\*pasʷə* “penis”; PA *\*pūsü* “to squirt out, to pour”; S *peš* “sperm, semen”, *peš* “descendant, offspring, son”.
63. PN *\*p<sup>h</sup>]alʷ-/p<sup>h</sup>]əlʷ-* “to burn, to be warm; to smart, to be painful” > PIE *\*p<sup>h</sup>]el-/p<sup>h</sup>]ol-*, *\*p<sup>h</sup>]loH-* (> *\*p<sup>h</sup>]ō-*) “to burn, to be warm; to smart, to be painful”; PK *\*o-p<sup>h</sup>]ē-* “sweat, perspiration”; PFU *\*palʷa-* “to burn; to be cold, to be freezing; to smart”.
64. PN *\*p<sup>h</sup>]il-/p<sup>h</sup>]el-* “to tremble, to shake; to be frightened, fearful, afraid” > PIE *\*p<sup>h</sup>]el-/p<sup>h</sup>]ol-/p<sup>h</sup>]ē-* “to tremble, to shake; to be frightened, fearful, afraid”; PAA *\*p<sup>h</sup>]al-/p<sup>h</sup>]əl-* “to tremble, to shake; to be frightened, fearful, afraid, awe-struck”; PU *\*pelä-* “to fear, to be afraid”.
65. PN *\*p<sup>h</sup>]acʷ-/p<sup>h</sup>]əcʷ-* “to part, to separate from, to split or break open, to split or break apart” > Kartvelian: Mingrelian *pač-* “to open”; PAA *\*p<sup>h</sup>]acʷ-/p<sup>h</sup>]əcʷ-* “to split apart, to separate, to cleave”; PU *\*pāčā-* “to part, to separate from, to break open or apart”.
66. PN *\*p<sup>h</sup>]ir-/p<sup>h</sup>]er-* “to turn, to twist” > PIE *\*p<sup>h</sup>]eri* “around”; PU *\*pirä* “round; any round object; around, round about”; PD *\*pir-* “to twist, to turn; a twist, twining, twisting, strand”; S *pir* “to wrinkle, to crumple; to be rolled up, contracted”; PE *\*pirōir-* “to braid or weave”.
67. PN *\*p<sup>h</sup>]ir-/p<sup>h</sup>]er-* “to ask, to request, to entreat, to beseech” > PIE *\*p<sup>h</sup>]erk<sup>h</sup>]l-/p<sup>h</sup>]rk<sup>h</sup>]l-*, *\*p<sup>h</sup>]rek<sup>h</sup>]l-/p<sup>h</sup>]rok<sup>h</sup>]l-* “to ask, to request”; Afroasiatic: PSC *\*fir-* “to pray, to ask for (something)”; PA *\*pirü-* “to pray, to ask”.
68. PN *\*p<sup>h</sup>]ir-/p<sup>h</sup>]er-* “to tremble, to shake; to be afraid, to fear” > PIE *\*p<sup>h</sup>]erk<sup>h</sup>]l-/p<sup>h</sup>]rk<sup>h</sup>]l-* “to be afraid, to fear”; PK *\*p<sup>h</sup>]ert<sup>h</sup>]x-* “to shake”; PAA *\*p<sup>h</sup>]ar-/p<sup>h</sup>]ər-* “to tremble, to shake, to quiver”; PD *\*pir-* “to tremble”; PA *\*pürk-* “to be afraid”.
69. PN *\*p<sup>h</sup>]ar-/p<sup>h</sup>]ər-* “to go or pass; to go or pass over or across; to go forth or out” > PIE *\*p<sup>h</sup>]er-/p<sup>h</sup>]or-/p<sup>h</sup>]ē-* “to go or pass; to go or pass over or across”; Afroasiatic: Egyptian

- pri* “to go, to come out, to go forth; to go up, to ascend”, *prw* “motion, procession, outcome, result”, *pri* “(ritual) procession”; S *pâr* “to go or pass by, to go past”.
70. PN *\*diy-/ \*dey-* “to throw, to cast, to put, to place” > PIE (*\*d[h]ey-C-*) *\*d[h]ē-* “to set, to put, to place”; PAA *\*day-/ \*dēy-* “to cast, to put, to place”.
71. PN *\*dab-/ \*dēb-* “to make fast, to join together, to fasten (together)” > PIE *\*d[h]ab[h]-* “to fit together”; PAA *\*dab-/ \*dēb-* “to stick together, to join together”; S *dab* “to grasp, to seize, to take; to pack; to bind, to fasten (together); to hold”, *dab<sub>s</sub>* “to catch, to seize, to capture; to take; to grasp; to pack; to bind; to hold tightly”.
72. PN *\*dul-/ \*dol-* “to dangle, to swing back and forth” > PIE *\*d[h]el-/ \*d[h]ol-* “to swing, to dangle”; PAA *\*dal-/ \*dāl-* “to dangle, to hand”; PD *\*tul-* “to move, to sway from side to side, to shake; to hang, to swing”.
73. PN *\*dun-/ \*don-* “to cut off, to cleave, to split” > PIE *\*d[h]en-/ \*d[h]on-/ \*d[h]n̥-* “to cut, to cut off, to cleave”; PAA *\*dan-/ \*dān-* “to cut, to cut off, to cleave”; PD *\*tun-* “to be sundered, cut, severed; to cut, to sever”; S *dun* “to dig (with a hoe)”.
74. PN *\*day-/ \*dēy-* “to look at, to consider, to examine” > PIE *\*d[h]ey-A-/ \*d[h]oy-A-/ \*d[h]i-A- (> \*d[h]ī-)* “to look at”; PAA *\*day-/ \*dēy-* “to look at, to consider, to examine” PD *\*tē-ṭ-*, *\*tē-ṭ-* “to seek, to search for”.
75. PN *\*daw-/ \*dēw-* (?) “to sound, to resound, to make a noise” > PIE *\*d[h]w-en-/ \*d[h]u-n-* “to sound, to resound”; PAA *\*daw-/ \*dēw-* “to sound, to resound”; S *du<sub>12</sub>* “to play (an instrument), to sing”.
76. PN *\*dur-/ \*dor-* “spot, dirt, blemish” > PIE *\*d[h]er-/ \*d[h]or-/ \*d[h]r̥-* “dirt, filth”; Afroasiatic: Arabic *darina* “to be dirty, filthy”, *daran* “dirt, filth”; PD *\*tur-* “rust, spot, dirt, blemish, stain, defect”.
77. PN *\*dum-/ \*dom-* “to become dark” > PIE *\*d[h]em-/ \*d[h]om-* “dark; to darken, to make dark”; PAA *\*dam-/ \*dām-* “to become dark”.
78. PN (*\*dum-k’w-/ \*dom-k’w-*) *\*dun-k’w-/ \*don-k’w-* “to cover over, to obscure, to make dark” (derivative of the preceding) > PIE *\*d[h]enk’w-/ \*d[h]onk’w-/ \*d[h]n̥k’w-* “to be or become dark”; Altaic: Manchu *duṅ* “a cave”, *duṅgu* “a cave, grotto”; S *dungu* “cloud”.

79. PN *\*dal-/dāl-* “to cut, to prick, to pierce, to gash, to notch, to wound” > PIE *\*d<sup>h</sup>el-b<sup>h</sup>]*-/*\*d<sup>h</sup>ol-b<sup>h</sup>]*-/*\*d<sup>h</sup>l<sub>s</sub>-b<sup>h</sup>]*- “to dig, to hollow out”, *\*d<sup>h</sup>el-g<sup>h</sup>]*-/*\*d<sup>h</sup>ol-g<sup>h</sup>]*-/*\*d<sup>h</sup>l<sub>s</sub>-g<sup>h</sup>]*- “to gash, to wound”, *\*d<sup>h</sup>el-k’-/d<sup>h</sup>ol-k’-/d<sup>h</sup>l<sub>s</sub>-k’-* “sharp object; to prick, to pierce”; PAA *\*dal-/dāl-* “to cut, to prick, to pierce, to gash, to notch”; PD *\*tall-* “to strike, to hit, to beat”; Altaic: Mongolian *delbere-* “to split or crack open, to burst, to split, to crack, to rupture”; Evenki *derpeli-* “to split, to cleave, to rend”; Turkish *delmek* “to bore, to pierce”; S *dála* “thorn, needle”.
80. PN *\*dig-/deg-* “fish” > PIE *\*d<sup>h</sup>g<sup>h</sup>juH-* (> *\*d<sup>h</sup>g<sup>h</sup>ū-*) “fish”; PAA *\*dag-* “fish”; PA *\*diga-* “fish” (> pre-Mongolian *\*ǰiga-* [> *\*ǰaga-*]).
81. PN *\*diq<sup>h</sup>]/deq<sup>h</sup>]*- “earth, ground, soil, clay” > PIE (*\*deq<sup>h</sup>]*- > [with progressive voicing assimilation] *\*deG-* >) *\*d<sup>h</sup>eg<sup>h</sup>-om-*, *\*d<sup>h</sup>g<sup>h</sup>-om-* “earth, ground; human being”; PK *\*diq<sup>h</sup>ja* “earth, clay”.
82. PN *\*dag-/dæg-* “to glitter, to shine, to burn brightly; day” > PIE *\*d<sup>h</sup>og<sup>h</sup>]*- “day”; Afroasiatic: Geez (reduplicated) *dagdaga* “to be early in the morning, to get up early in the morning”; PD *\*tak-(tak-)* “to glitter, to shine”; S (reduplicated) *dadag* “clear, shining, bright, radiant, brilliant, luminous”, *dág* “shining, bright, clean”.
83. PN *\*dan-/dān-* “to run, to flow” > PIE *\*d<sup>h</sup>en-/d<sup>h</sup>on-/d<sup>h</sup>ṇ-* “to run, to flow”; PK *\*den-/din-* “to run, to flow”, *\*dṇ-* “to melt”; Afroasiatic: PHEC *\*dun-* “to leak (for example, bag, roof)”, *\*dun-am-* “to leak (for example, water)”.
84. PN *\*dar-/dār-* “to bend, to twist, to turn” > PIE *\*d<sup>h</sup>erg<sup>h</sup>]/d<sup>h</sup>org<sup>h</sup>]/d<sup>h</sup>ṛg<sup>h</sup>]*-, *\*d<sup>h</sup>reg<sup>h</sup>]/d<sup>h</sup>rog<sup>h</sup>]*- “to turn”; PK *\*dr-ek’-* “to bend (trans.)”, *\*der-k’-* “to bend, to stoop (intr.)”; PAA *\*dar-/dār-* “to go, to walk, to proceed; to wrap, to wind, to twist”.
85. PN *\*daw-/dāw-* “to become exhausted, to die” > PIE *\*d<sup>h</sup>ew-/d<sup>h</sup>ow-/d<sup>h</sup>u-* “to become exhausted, to die”; PAA *\*daw-/dāw-* “to be sick, ill; to die”.
86. PN *\*dilv-/dely-* “to shine, to be or become bright” > PIE *\*d<sup>h</sup>el-* “to be shining, bright”; PK *\*dila* “morning”; PAA *\*dal-/dāl-* “to shine, to be bright”; PD *\*tel-* “to be bright, to become white; to become clear; to shine, to sparkle”; S *dil-bad* “to shine, to be radiant, to gleam; shining, bright”.
87. PN *\*dul-/dol-* “to burn, to be bright” > PU *\*tula* “fire”; PD (*\*tuly-* >) *\*tul-* “to shine, to sparkle, to glitter, to be bright”; PA *\*dul-* “to warm”.

88. PN *\*day-/\*dəy-* “to take, to bring, to convey” > PAA *\*day-/\*dəy-* “to bring, to convey, to lead”; PD *\*ta-*, *\*tā-*, *\*tay-* “to bring”; S *dé*, *de<sub>6</sub>*, *di* “to bring”.
89. PN *\*da/\*də* “along with, together with, in addition to” > PIE suffixed particle *\*-d<sup>h</sup>ji*, *\*-d<sup>h</sup>je*; PK *\*da* “and”; Afroasiatic: PC *\*də* “with, and”; Elamo-Dravidian: Elamite *da* “also, too, as well, likewise; to, therefore, consequently, accordingly, hence, thereby, thereupon”; PA locative suffix *\*-da*, independent particle *\*da* “together with, and, also”; S *da* “with, together with, along with, besides” also used as a comitative ending in the meaning “with, together with”.
90. PN *\*daw-/\*dəw-* “to put, to place, to set; to set up, to establish; to do, to make; to stay, to remain” > PK *\*dew-/\*dw-* “to lay, to put, to place, to set, to lie”; S *du* “to do, to make; to build; to set up, to establish”, *du<sub>6</sub>* “to sit, to be seated; to stay, to remain”.
91. PN *\*t<sup>h</sup>]ak<sup>h</sup>]/-/\*t<sup>h</sup>]ək<sup>h</sup>]/-* “to form, to fashion, to make, to create” > PIE *\*t<sup>h</sup>]ek<sup>h</sup>]/(s)-* */\*t<sup>h</sup>]ok<sup>h</sup>]/(s)-* “to form, to fashion, to make, to create”; PFU *\*teke-* “to do, to make”.
92. PN *\*t<sup>h</sup>]ap<sup>h</sup>]/-/\*t<sup>h</sup>]əp<sup>h</sup>]/-* “to burn, to be hot” > PIE *\*t<sup>h</sup>]ep<sup>h</sup>]/-/\*t<sup>h</sup>]op<sup>h</sup>]/-* “to burn, to be hot”; PAA *\*t<sup>h</sup>]ap<sup>h</sup>]/-/\*t<sup>h</sup>]əp<sup>h</sup>]/-* “to burn, to be hot”.
93. PN *\*t<sup>h</sup>]ir-/\*t<sup>h</sup>]er-* “to be or become full, to be satisfied” > PAA *\*t<sup>h</sup>]ar-/\*t<sup>h</sup>]ər-* “to be or become full, to increase, to add to”; PU *\*tirā-* “to fill, to become full, to become satisfied”.
94. PN *\*t<sup>h</sup>]ir-ap<sup>h</sup>]/-/\*t<sup>h</sup>]er-ap<sup>h</sup>]/-* “to have all need fulfilled, to have enough, to be satisfied” (extended form of the preceding) > PIE *\*t<sup>h</sup>]erp<sup>h</sup>]/-/\*t<sup>h</sup>]orp<sup>h</sup>]/-/\*t<sup>h</sup>]ṛp<sup>h</sup>]/-*, *\*t<sup>h</sup>]rep<sup>h</sup>]/-/\*t<sup>h</sup>]rop<sup>h</sup>]/-* “to be satisfied, to have enough”; PAA *\*t<sup>h</sup>]arap<sup>h</sup>]/-/\*t<sup>h</sup>]arəp<sup>h</sup>]/-/\*t<sup>h</sup>]ərap<sup>h</sup>]/-/\*t<sup>h</sup>]ərəp<sup>h</sup>]/-* “to have all needs fulfilled, to have enough, to be satisfied”.
95. PN *\*t<sup>h</sup>]arʷ-/\*t<sup>h</sup>]ərʷ-* “to rub, to wear down” > PIE *\*t<sup>h</sup>]er-/\*t<sup>h</sup>]or-/\*t<sup>h</sup>]r̥-* “to rub, to wear down”; PD *\*taṛ-* “to rub, to wear away, to grind; to be worn out, rubbed, ground”; S *tar* “to be distressed, troubled”.
96. PN *\*t<sup>h</sup>]arʷ-/\*t<sup>h</sup>]ərʷ-* “weak, frail, delicate” (derivative of the preceding) > PIE *\*t<sup>h</sup>]er-/* *\*t<sup>h</sup>]or-* “weak, frail, delicate”; Afroasiatic: Egyptian *tr* “to be weak”.
97. PN *\*t<sup>h</sup>]ir-/\*t<sup>h</sup>]er-* “to tremble, to shake” > PIE *\*t<sup>h</sup>]er-s-*, *\*t<sup>h</sup>]r-es-* “to tremble, to shake”, *\*t<sup>h</sup>]r-em-* “to tremble, to shake”; PK *\*t<sup>h</sup>]ṛt<sup>h</sup>]/-* “to tremble”; PAA *\*t<sup>h</sup>]ar-/\*t<sup>h</sup>]ər-* “to tremble, to shake”; PD *\*tir-* “to tremble”.



98. PN *\*t[h]aly-/t[h]əly-* (primary meaning) “to stretch, to spread, to extend”, then “to lift, to raise, to make high” > PIE *\*t[h]el-/t[h]ol-/t[h]l-* “to lift, to raise, to stretch, to extend”; PAA *\*t[h]al-/t[h]əl-* “to lift, to raise, to stretch, to spread, to extend”; PD *\*tāl-* “to bear, to carry, to suffer, to tolerate”, *\*tel-* “thin, delicate; thinness, delicateness”; PA *\*tal-* “to stretch, to extend, to be or make wide; to lift, to raise, to carry; (adj.) spread, wide, broad, level, flat”; S *tāl* “to be or make wide, broad; to spread wide”.
99. PN *\*t[h]ar-/t[h]ər-* “to be dry, arid” > PIE *\*t[h]ers-/t[h]ors-/t[h]rs-* “to be or become dry”; PAA *\*t[h]ar-/t[h]ər-* “to be dry, arid”.
100. PN *\*t[h]ak’-/t[h]ək’-* “to touch, to push, to strike” > PIE *\*t[h]ak’-* “to touch, to strike, to push, to stroke”; PAA *\*t[h]ak’-/t[h]ək’-* “to touch, to push, to strike”; PD *\*tak-* “to come into contact with, to touch, to hit, to strike against”; S *tag* “to touch”.
101. PN *\*t[h]am-/t[h]əm-* “to cover over, to hide; to become dark” > PIE *\*t[h]em-/t[h]om-* “dark, darkness”; PAA *\*t[h]am-/t[h]əm-* “to cover over, to hide; to become dark”; PY (Sireniki) *\*ta(a)mlək* “darkness”.
102. PN *\*t[h]i/t[h]e* “you” > PIE (nom. sg.) *\*t[h]i* “you”, (acc. sg.) *\*t[h]wē/t[h]ē*; (2nd. pl. verb ending) *\*-t[h]e*; PAA *\*t[h]a/t[h]ə* “you”; PU (sg.) *\*te* “you”, (pl.) *\*te* “you”; Elamo-Dravidian: Elamite (2nd sg. verb ending) *-t*; Dravidian: Parji (appositional marker of 2nd sg. in pronominalized nouns and verb suffix of 2nd sg.) *-t*; PA *\*ti* (> CM *\*či*); S *za-e* “you”, (2nd sg. possessive suffix) *-zu* “your”; Eskimo-Aleut: West Greenlandic 2nd sg. absolutive possessive suffix *-(i)t*.
103. PN (demonstrative pronoun stems) *\*t[h]a-/t[h]ə-* “this”, *\*t[h]u-/t[h]o-* “that” > PIE *\*t[h]o-* “this, that”; PAA *\*t[h]a-/t[h]ə-* “this, that”; PU *\*ta/tā* “this”, *\*to-* “that”; PD *\*tā(m)-* “they, themselves”; PA *\*te* “that”.
104. PN *\*t[h]aw-/t[h]əw-* “to swell” > PIE *\*t[h]ew-/t[h]ow-/t[h]u-* “to swell”; Afroasiatic: Egyptian *twš-w* “pustules, swellings”; PFU *\*täwde* “full”; PD *\*tava* “much, abundantly, greatly”.
105. PN *\*t[h]ik’-/t[h]ek’-* “to be or become established, firm, solid” > PIE *\*t[h]ek’-u-* “firm, solid, thick”; PAA *\*t[h]ak’-/t[h]ək’-* “to be or become established, firm, solid”; PA *\*tigīrak* “thick, massive, firm, solid, vigorous”.
106. PN *\*t[h]an-/t[h]ən-* “to extend, to spread, to stretch” > PIE *\*t[h]en-/t[h]on-/t[h]n-* “to extend, to spread, to stretch”, *\*t[h]ən-ú-s* “thin”, *\*t[h]en-k[h]-* “to stretch, to extend”,

- (\**t<sup>h</sup>*en-p<sup>h</sup>]- > [through assimilation]) \**t<sup>h</sup>*em-p<sup>h</sup>]- “to stretch”, \**t<sup>h</sup>*on-k’- “to think, to feel”; PAA \**t<sup>h</sup>*an-/ \**t<sup>h</sup>*ən- “to extend, to spread, to stretch, to endure”; PD \**taŋ*- “to increase, to thrive, to abound”; (?) Altaic: Classical Mongolian *tani*- “to know, to learn”.
107. PN \**t<sup>h</sup>*um-/ \**t<sup>h</sup>*om- “to fill, to fulfill” > PAA \**t<sup>h</sup>*am-/ \**t<sup>h</sup>*əm- “to fulfill, to finish, to complete, to terminate, to end; to be fulfilled, completed, finished, ended, done”; PFU \*(\**tum*-ke- > [through assimilation]) \**tun*ke- “to fill up, to stuff in, to cram”; PD \**tump*- “to be or become full, filled up, complete; to fill, to abound; (adj.) abundant, much”; S *tum* “abundance, plenty”.
108. PN \**t<sup>h</sup>*alʷ-/ \**t<sup>h</sup>*əlʷ- “to push, to thrust” > PIE \**t<sup>h</sup>*elk<sup>h</sup>]/- \**t<sup>h</sup>*olk<sup>h</sup>]/- \**t<sup>h</sup>*lk<sup>h</sup>]/- “to push, to thrust”; PK \**t<sup>h</sup>*el- “to press”; PAA \**t<sup>h</sup>*al-/ \**t<sup>h</sup>*əl- “to push, to thrust”; PFU \**tol*ʷ- “to push, to shove, to thrust”; PD \**tal*- “to push, to shove, to thrust, to press through”.
109. PN \**t<sup>h</sup>*al-/ \**t<sup>h</sup>*əl- “head, top, end” > PIE \**t<sup>h</sup>*əl- “head, top, end”; PD \**tal*- “head, top, end”.
110. PN \**t<sup>h</sup>*ur-/ \**t<sup>h</sup>*or- “to cram, to push in, to stuff, to thrust in, to press in” > PIE \**t<sup>h</sup>*r- (\**t<sup>h</sup>*r-ew-d<sup>h</sup>]/- \**t<sup>h</sup>*r-ow-d<sup>h</sup>]/- \**t<sup>h</sup>*r-u-d<sup>h</sup>]/-; \**t<sup>h</sup>*r-en-k<sup>h</sup>]/-), \**t<sup>h</sup>*r̥- “to cram, to push in, to stuff, to thrust in, to press in”; PD \**tur*- “to cram, to stuff, to force in, to press or crowd into, to thrust in”.
111. PN \**t<sup>h</sup>*aḥ-/ \**t<sup>h</sup>*əḥ- “to reduce, to diminish, to wear away, to lessen” > PIE \**t<sup>h</sup>*eḥh- [\**t<sup>h</sup>*aḥh-] (> \**t<sup>h</sup>*ā-; \**t<sup>h</sup>*ā-y-, \**t<sup>h</sup>*ā-w-) “to melt, to dissolve”; PK \**t<sup>h</sup>*xe- “to reduce, to diminish; to pour out, to empty”; PAA \**t<sup>h</sup>*aḥ-/ \**t<sup>h</sup>*əḥ- “to wear away”; PD \**tēy*- “to wear away by friction, to be rubbed, to wane, to waste away”.
112. PN \**t<sup>h</sup>*ar-/ \**t<sup>h</sup>*ər- “to draw, to pull, to drag” > PIE \**t<sup>h</sup>*r-eA-g<sup>h</sup>]/- [\**t<sup>h</sup>*raAg<sup>h</sup>]/-] (> \**t<sup>h</sup>*rāg<sup>h</sup>]/-) “to draw, to drag, to pull”; PK \**t<sup>h</sup>*r- “to drag”; PD (reduplicated) \**tar*-*tar*- “noise of dragging something along the ground”.
113. PN \**t<sup>h</sup>*ar-/ \**t<sup>h</sup>*ər- “to spread, to spread out, to expand, to extend; to stretch, to stretch out, to scatter, to strew” > PIE \**st<sup>h</sup>*er- “to spread, to spread out, to scatter, to strew”; PAA \**t<sup>h</sup>*ar-/ \**t<sup>h</sup>*ər- “to stretch out, to extend”; PFU \**tara*- “to open”; PD \**tār*- “to sift, to winnow”; Altaic: Mongolian *tara*- “to disperse, to scatter, to be separated, to part”, *tarqa*- “to scatter, to spread, to be dispersed”; S *tar* “to disperse, to scatter”, *tar* “to loosen, to untie, to open”.

114. PN *\*t[h]ar-/\*t[h]ər-* “to scratch, to scrape” > PD *\*tarc-* “to scrape”; PA *\*tarī-* “to till (land), to plow; to sow, to harvest”.
115. PN *\*t[h]ar-/\*t[h]ər-* “to drink” > PK *\*t[h]r-* “to drink”; PD *\*tārk-* “to drink, to swallow”.
116. PN *\*t'ar-/\*t'ər-* “to tear, to rend, to cut, to sever” > PIE *\*t'er-/\*t'or-/\*t'g-* “to tear, to rend, to flay”; PD *\*tar-* “to lop, to chop off, to cut (off), to strip off”; S *dar* “to split”.
117. PN *\*t'ar-ap[h]-/\*t'ər-ap[h]-* “to tear, to rend, to cut, to pluck” (extended form of the preceding) > PIE *\*t'r-ep[h]-/\*t'r-op[h]-* “to tear, to rend, to pluck”; Kartvelian: Georgian *t'rp-* “to cherish” (< “to enjoy”; semantic development as in Hebrew [hif.] *haṭrīp* “to let someone enjoy [food]”); PAA *\*t'ar-ap[h]-/\*t'ər-ap[h]-/\*t'ar-əp[h]-/\*t'ər-əp[h]-* “to tear, to rend, to cut, to pluck”.
118. PN *\*t'ulv-/\*t'olv-* “to drip, to fall in drops, to sprinkle, to wet, to moisten” > PIE *\*t'el-/\*t'ol-* “to drip, to fall in drops, to sprinkle, to wet, to moisten”; PAA *\*t'al-/\*t'əl-* “to bedew, to wet, to moisten”; PD *\*tul-* “to drip, to fall in drops, to trickle down, to rain, to sprinkle”.
119. PN *\*t'ay-/\*t'əy-* “to shine, to gleam, to be bright, to glitter, to glow, to burn brightly” > PIE *\*t'ey-/\*t'oy-/\*t'i-* “to shine, to be bright”; PD *\*tī(y)-* “to scorch, to burn, to roast; to shine brightly”; S *dé* “to smelt”, *dé*, *dè*, *dè-dal* “ashes”, *dè*, *di*<sub>5</sub> “glowing embers”, *dè-dal-la* “to torch”, *di*<sub>5</sub> “to flare up, to light up; to be radiant, shining; to sparkle, to shine”.
120. PN *\*t'aw-/\*t'əw-* (?) “to revere, to honor, to worship” > PIE *\*t'ew-/\*t'ow-/\*t'u-* “to revere, to honor, to esteem, to venerate”; Afroasiatic: Egyptian *dwṣw* “praises”, *dwṣ-t* “praise, worship”, *dwṣ* “to praise, to worship”.
121. PN *\*t'uw-/\*t'ow-* “to give, to put, to place” > PIE (*\*t'ow-C-* >) *\*t'ō-* “to give, to put, to place”; Afroasiatic: Egyptian *d*, *dw* “to give, to put, to place”; (?) PU *\*toγa-* “to give, to bring”.
122. PN *\*t'ar-añ-/\*t'ər-añ-* stem indicating rapid motion or vigorous activity > PIE *\*t'erñh-/\*t'orñh-*, *\*t'reñh-* [*\*t'rañh-*] (> *\*t'rā-*) “to do, to make”; PAA *\*t'ar-añ-/\*t'ər-añ-/\*t'ar-əñ-/\*t'ər-əñ-* stem indicating rapid motion or vigorous activity.
123. PN *\*t'al-/\*t'əl-* “to stretch, to extend” > PIE (*\*t'el-/\*t'ol-/\*t'g-* “to stretch, to extend, to lengthen”); *\*t'g-H-g[h]-* “long”, *\*t'l-eE-g[h]-* (> *\*t'l-ē-g[h]-*) “to stretch, to extend, to lengthen”; PAA *\*t'al-/\*t'əl-* “to stretch, to extend”; S *dalla* “to widen, to stretch, to extend, to enlarge”.

124. PN *\*t'ary-/t'əry-* “to grasp, to embrace” > Indo-European: Greek δράσσομαι “to grasp, to clutch”, δράγμα “as much as one can grasp, a handful”, δραχμή “a handful”, δράξ “handful, hand”; Afroasiatic: PSC *\*ḏar-* “to handle, to make with the hands”; PD *\*taṛ-* “to clasp, to embrace”.
125. PN *\*t'am-/t'əm-* “to quiet, to calm, to pacify, to tame” > PIE *\*t'om-H-/t'm-H-* “to tame, to subdue”; Afroasiatic: Arabic *ṭammana* “to quiet, to calm, to appease, to pacify, to allay, to assuage, to soothe”, *ṭamn* “quiet, tranquil”, *ṭam'ana*, *ṭa'mana* “to calm, to quiet, to pacify, to appease, to assuage, to soothe”.
126. PN *\*t'an-as-/t'en-as-* “to be tightly loaded, to be closely packed or pressed together” > PIE *\*t'gs-* “tightly loaded, closely packed or pressed together, dense”; Afroasiatic: Egyptian *dns* “to be loaded heavily”, *dns (ḏns)* “weight, load, burden; heavy”, *dnsmn* “to be heavy, weighty”, *dnsw* “weights”.
127. PN *\*t'um-/t'om-* “to twist, to turn, to wind” > PIE *\*t'em-* “worm”; PAA *\*t'am-/t'əm-* “to twist, to turn, to wind”; PA *\*toma-* “to twist or spin (thread, rope)”.
128. PN *\*t'ul-/t'ol-* “to reach, to attain, to strive for, to come to; aim, aspiration, goal, end, result” > PIE *\*t'el-/t'ol-* “to reach, to attain, to strive for, to come to”; PAA *\*t'al-/t'əl-* “to reach, to attain, to strive for, to come to”; PU *\*tula-* “to reach, to arrive at, to come to”; PD *\*tol-* “to come to an end; to be over, finished, over”, *\*tol-* “old, ancient”; PA *\*tul-* “to reach, to attain, to strive for, to come to”, *\*tul-ga-* “a support”.
129. PN *\*t'aw-/t'əw-* “to hit, to strike” > PIE *\*t'ew-/t'ow-/t'u-* “to hit, to strike”; PAA *\*t'aw-/t'əw-* “to hit, to strike”; S *du* “to butt, to gore”.
130. PN *\*t'aḥ-/t'əḥ-* “to split” > PIE *\*t'eḥh- [t'aḥh-]* (> *\*t'ā-*), extended form *\*t'eḥh-i/y-* [*\*t'aḥh-i/y-*] (> *\*t'āi-*, *t'ā[y]-*) “to cleave, to split, to divide”; PK *\*t'ex-* “to break”; PAA *\*t'aḥ-/t'əḥ-* “to break, to split, to divide”.
131. PN *\*t'ak[h]/t'ək[h]-* “to be fit, appropriate, suitable, proper” > PIE *\*t'ek[h](s)-/t'ok[h](s)-* “to be fit, appropriate, suitable, proper”; PD *\*tak-* “to be fit, appropriate, suitable, proper”.
132. PN *\*t'ak[h]/t'ək[h]-* “to take, to seize, to grasp, to obtain” > PIE *\*t'ek[h]/t'ok[h]-* “to take”, (?) *\*t'ek[h]-m* “ten”; PD *\*tek-* “to take, to receive”.

133. PN *\*t'im-/\*t'em-* “to make, to fashion, to create, to build” > PIE *\*t'em-/\*t'om-* “to build, to construct”, *\*t'om-o-*, *\*t'om-u-* “house”; S *dím* “to make, to fashion, to create, to build”.
134. PN *\*t'ab-/\*t'əb-* “to be or become warm; to make warm, to heat up” > PK *\*t'ab-/\*t'b-* “to heat up; to be heated”; PAA *\*t'ab-/\*t'əb-* “to be or become warm; to make warm, to heat up”; S *tab* “to burn, to blaze; fever”.
135. PN *\*t'aq'-/\*t'əq'-* “to cover, to protect” > PIE *\*(s)t'ek'-/\*(s)t'ok'-* > (with regressive deglottalization) *\*(s)t[ʰ]ek'-/\*(s)t[ʰ]ok'-* “to cover”; PK *\*t'q'aw-* “skin, hide”; PAA *\*t'ak'-/\*t'ək'-* “to cover, to obscure”; (?) PE *\*taqiγ-* “to be secretive about something”.
136. PN *\*t'uk'-/\*t'ok'-* “to knock, to beat, to strike, to pound, to trample” > PIE *\*t'ek'-/\*t'ok'-* > (with regressive deglottalization) *\*t[ʰ]ek'-/\*t[ʰ]ok'-* “to knock, to beat, to strike”; PK *\*t'k'ac[ʰ]j-* “to hit, to strike”; PAA *\*t'ak'-/\*t'ək'-* “to knock, to beat, to strike, to pound”; PFU *\*tukə-* (*\*tuγə-*) “to break, to crush”; PD *\*tuk-* “to tread down, to trample on, to step on; to beat, to strike, to pound, to mash”; PA *\*tugi-la-* “to strike with the feet, to rear, to buck (of a horse)”; S *dug<sub>4</sub>-ga* “to strike, to beat, to hit, to smite, to kill”; PE *\*tukəR-* “to kick or push with foot”, *\*tukkar-* “to trample or kick repeatedly”.
137. PN *\*t'uq'-/\*t'oq'-* “to say, to speak, to tell” > PK *\*t'q'w-* “to report, to let know, to communicate, to inform, to make known”; S *dug<sub>4</sub>* “to say, to speak, to tell”.
138. PN *\*t'ab-/\*t'əb-* “to strike, to slay, to kill” > PAA *\*t'ab-/\*t'əb-* “to slay, to kill, to slaughter, to sacrifice”; PU *\*tappa-* “to strike, to hit, to beat, to slay, to kill”; PD *\*tapp-* “to strike, to beat, to kill”.
139. PN *\*t'aw-/\*t'əw-* “to leave, to go away; to send forth, to let go, to chase away, to release” > PIE *\*t'ow(-A)-/\*t'u(-A)-* “to leave, to go far away”; PK *\*t'ew-* “to leave, to go away; to release, to let go”; Afroasiatic: Arabic *ṭāḥa* (base *ṭwh*) “to perish, to die, to go away, to depart, to lose one's way, to go astray, to stray, to wander about; to fall, to throw, to cast, to fling, to hurl, to toss, to carry away, to sweep away”; PD *\*tav-* “to put away, to remove, to dispel, to chase away, to expel, to exclude”; S *du* “to go, to leave, to depart, to go away”, *du-ri* “long time”, *du<sub>8</sub>* “to let go, to let loose, to release, to set free”, *duh* “to release, to set free, to loosen, to untie, to release, to open”.
140. PN *\*dʷab-/\*dʷəb-* “to beat, to hit, to strike, to harm, to injure” > PIE *\*d[ʰ]eb[ʰ]j-/d[ʰ]ob[ʰ]j-* “to harm, to injure”; PAA *\*dʷab-/\*dʷəb-* “to harm, to injure”.

141. PN *\*dʲan-w-* “a kind of tree” > PIE *\*d[h]anw/u-* “a kind of tree”; PAA *\*dʲan-w-* “a kind of tree”.
142. PN *\*dʲakw[h]-/\*dʲəkʷ[h]-* “to blaze, to be bright” > PIE *\*dʲəkʷ[h]-/\*dʲakw[h]-* > (with progressive voicing assimilation and depalatalization of initial *\*dʲ*) *\*d[h]egʷ[h]-/\*d[h]ogʷ[h]-* “to blaze, to burn”; PAA *\*dʲakw[h]-/\*dʲəkʷ[h]-* “to blaze, to be bright”.
143. PN *\*dʲar-/\*dʲər-* “to hold firmly” > PIE *\*d[h]er-/\*d[h]or-/\*d[h]r-* “to hold firmly in the hand, to support”; PAA *\*dʲar-/\*dʲər-* “to hold firmly; hand, arm”.
144. PN *\*dʲaw-/\*dʲəw-* “to split, to prick, to pierce, to penetrate”; (extended form in Indo-European and Kartvelian) *\*dʲaw-ar-/\*dʲəw-ar-/\*dʲaw-ər-/\*dʲəw-ər-* “to stab, to pierce, to penetrate; (n.) any pointed object: spike, prong, etc.” > PIE *\*d[h]wer-/\*d[h]wor-/\*d[h]ur-* “to stab, to pierce, to penetrate; (n.) any pointed object: spike, prong, dagger, fork, pole, etc.”; PK *\*ǰwar-* “stake”; S *du* “to bore through”, *du*<sub>7</sub> “to impale”, *du*<sub>8</sub> “to split, to destroy, to demolish, to ruin”, *du*<sub>8</sub> “to split apart, to separate, to detach; to break off, to pluck”, *du*<sub>8</sub> “split, crack, crevice, fissure”.
145. PN *\*dʲaw-/\*dʲəw-* “to run, to flow, to gush forth” > PIE *\*d[h]ew-/\*d[h]ow-* “to run, to flow”; PK *\*ǰw-*, *\*ǰw-am-/\*ǰw-m-* “to void excrement”; PAA *\*dʲaw-/\*dʲəw-* “to run, to gush”; S *du*<sub>9</sub> “to run; to wander or roam about”, *du*<sub>9</sub>-*du*<sub>9</sub> “to run about; to wander or roam about”, *du*<sub>10</sub>-*bad-bad* “to run very quickly”, *du*<sub>10</sub>-*bar* “to move quickly”.
146. PN *\*dʲi-/\*dʲe-* demonstrative stem > PAA *\*dʲa-/\*dʲə-* demonstrative stem; PU *\*tʲi-/\*tʲe-* demonstrative stem: “this, that”.
147. PN *\*tʲ[h]um-/\*tʲ[h]om-* “to strike, to hit, to beat” > PIE *\*t[h]em-/\*t[h]om-* “to strike, to hit, to beat, to stun, to stupefy; to be stunned, stupefied, faint, exhausted, dizzy”; PAA *\*tʲ[h]am-/\*tʲ[h]əm-* “to strike, to hit, to beat”; PD *\*cōm-* “to droop, to fade; to be idle, lazy, indolent, fatigued”; S *šum* “to slaughter”.
148. PN *\*tʲ[h]awr-* “bull, steer” > PIE *\*t[h]awro-* “bull”; PAA *\*tʲ[h]awr-* “bull, steer”.
149. PN *\*tʲ[h]ar-/\*tʲ[h]ər-* “to advance toward an end or a goal; to attain or achieve an end or a goal, to reach, to come to, to arrive at; to master, to become master of” > PIE *\*t[h]er-/\*t[h]or-/\*t[h]r-*, (extended forms) *\*t[h]erh̥h-/\*t[h]orh̥h-/\*t[h]r̥h̥h-*, *\*t[h]reh̥h-/\*t[h]rah̥h-/\*t[h]roh̥h-* (> *\*t[h]rā-/\*t[h]rō-*) “to advance to or toward an end or a goal, to pass across or over, to pass through; to attain or achieve an end or a goal, to reach, to come to, to arrive at, to overcome, to overtake; to master, to become master of, to control”; PAA *\*tʲ[h]ar-*

- /\*tʰ[h]ər-* “to advance toward an end or a goal; to attain or achieve an end or a goal, to reach, to come to, to arrive at”; PD *\*cār-* “to reach, to approach, to be near to”; S *šár* “to bring together”, (reduplicated) *šár-šár* “to arrange in order, to set or put in order, to organize”.
150. PN *\*tʰ[h]iqʷ-/tʰ[h]eqʷ-* “to swell; (n.) swelling, growth” > PK *\*č[h]iqʷ-* “goiter”; PU *\*tʰiklā* “swelling, outgrowth (on the skin), pustule”.
151. PN *\*tʰyar-/tʰyər-* “to be or become stuck, joined, or bound together; to be or become firmly attached; to be firm, solid, steadfast” > PIE *\*tʰer-w/u-*, *\*tʰr-ew-/tʰr-u-*, *\*tʰr-ew-H-/tʰr-u-H-* (> *\*tʰr-ū-*) “to be solid, firm, strong, steadfast”, *\*tʰer-w/u-/tʰor-w/u-*, *\*tʰr-ew-/tʰr-u-* “tree, wood”; PAA *\*tʰyar-/tʰyər-* “to be or become stuck, joined, or bound together; to be or become firmly attached”.
152. PN *\*tʰyar-/tʰyər-* “to be rough, coarse, rigid, stiff, hard” (perhaps identical to the preceding) > PIE *\*tʰs-s-* “rough, coarse”; PU *\*tʰara* “hard, rigid, stiff”; PD *\*car-* “rough, coarse”.
153. PN *\*tʰyul-/tʰyol-* “to overshadow, to cover over, to make dark” > PIE *\*tʰel-/tʰol-* “to cover over, to stretch over”; PAA *\*tʰal-/tʰyəl-* “to overshadow, to cover over, to make dark”; S *dul* “to cover”.
154. PN *\*tʰyaw-/tʰyəw-* “bad, evil” > PIE *\*tʰews-/tʰows-/tʰus-* “bad, evil; (prefix) ill-, un-, mis-”; Afroasiatic: Egyptian *ḏw* “bad, evil”, *ḏw-t* “bad thing, wickedness, evil”, *ḏwy* “evil”; Coptic *ḡowt* “base, lowly, rejected”.
155. PN *\*tʰyan-/tʰyən-* “to think” > PIE *\*tʰen-s-/tʰon-s-/tʰn-s-* “great mental power, wise decision”; PAA *\*tʰyan-/tʰyən-* “to think”.
156. PN *\*tʰyar-/tʰyər-* “to cut, to split” > PK *\*čʰer-/čʰar-/čʰr-* “to cut”; PAA *\*tʰyar-/tʰyər-* “to cut, to split”; PFU *\*tʰärke-* “to split open, to rend”; PED *\*car-* “to tear, to rend, to split”.
157. PN *\*tʰyur-/tʰyör-* “to run, to flow” > PIE (*\*tʰer-/tʰor-/tʰr-* >) *\*tʰr-eA-* [*\*tʰr-aA-*] (> *\*tʰrā-*), *\*tʰr-em-/tʰr-om-/tʰr-m-*, *\*tʰr-ew-/tʰr-ew-/tʰr-u-* “to run, to flow”; PAA *\*tʰyar-/tʰyər-* “to run, to flow”; PU *\*tʰora-* “to run, to flow”; PD (*\*cory-* >) *\*coṛ-* “to run, to flee”.
158. PN *\*tʰyad-/tʰyəd-* “to pound, to beat, to strike” > PK *\*čʰed-* “to forge, to hammer”; PD *\*cat-* “to beat, to strike, to crush”.
159. PN *\*tʰyak[h]/tʰyək[h]-* “to cut into small pieces, to chop, to chip” > PIE *\*tʰak[h]-* “to cut or tear in shreds”; PK (reduplicated) *\*čʰe-čʰk[h]-* “to cut into small pieces”; Afroasiatic:

- PSC (reduplicated) *\*t'yā-t'yok-* or *\*t'yā-t'yokʷ-* (“to cut into small pieces” >) “to decrease, to become small or narrow”; PD *\*cakkay* “piece, slice, chip”, *\*cakk-* “to chip, to chop, to cut to pieces”; PY (Sireniki) *\*caki(tə)-* “to chop or cut into”.
160. PN *\*t'yar-/t'yər-* (onomatopoeic) “to make a noise” > PIE *\*t'ér-/t'or-/t'r-* “to make a noise; to hum, to buzz, to rattle”; PK *\*č'r-* “to make a squeaking noise”; PD (reduplicated) *\*cara-cara-* onomatopoeic expression of rustling (as of dry leaves); PI *\*caraq-* “to make a loud noise”.
161. PN *\*syil-/syel-* “fat, lard” > PIE *\*sel-p[h]/\*sol-p[h]/\*s<sub>ǵ</sub>-p[h]-* “fat, butter”; PU *\*syilä* “fat, lard”.
162. PN *\*syul-/syol-* “to be safe, well, sound” > PIE *\*sol-* “whole, sound, well, safe”; PAA *\*syal-/syəl-* “to be safe, well, sound”; PD *\*cōl-* (“in good health” >) “excellent, fine, beautiful”.
163. PN *\*syur-/syor-* “to surge, gush, flow, spring, or spread forth” > PIE *\*ser-/sor-* “to move quickly, to run, to flow”, *\*ser-p[h]/\*sor-p[h]/\*s<sub>ǵ</sub>-p[h]-* “to creep, to crawl”, *\*sr-ew-/sr-ow-/sr-u-* “to flow”; PAA *\*syar-/syər-* “to surge, gush, flow, spring, or spread forth”; PD *\*cōr-* “to flow, to ooze, to trickle, to leak, to gush”; S *šur* “to pour out, to flow, to bubble or boil up, to gush out; to arise from, to spring forth; to spread or stretch out; to rain”.
164. PN *\*syily-/syely-* “to take (away), to seize, to pull (off)” > PIE *\*sel-/sol-* “to take, to seize”; PAA *\*syal-/syəl-* “to take, to seize, to plunder”; PD *\*ciḷ-* “to strip off, to peel off, to pull (off), to pluck”.
165. PN *\*nasʷ-/nəsʷ-* “to breathe, to blow” > PIE *\*nas-* “nose”; PAA *\*nasʷ-/nəsʷ-* “to breathe, to blow”.
166. PN *\*syam-/syəm-* “to be hot, sunny” > PIE *\*sem-/som-/sm-* “summer”; PAA *\*syam-/syəm-* “to be hot, sunny”.
167. PN *\*syinʷ-/syenʷ-* “to change, to deteriorate, to grow old” > PIE *\*sen-* “old”; PAA *\*syān-/syən-* “to change, to deteriorate, to grow old”; PD *\*ceṇ-* “old man, old woman”.
168. PN *\*syaw-/syəw-* “to be dry, arid, withered” > PIE *\*saw-s-/su-s-* “dry”; PK *\*šw-er-/šw-r-* “to dry, to become dry”; Afroasiatic: Egyptian *šwy* “to be dry, arid, hot”, *šwyw* “dry, arid”, *šww* “dry, hot”, *šwi* “drought, heat”.
169. PN *\*syaw-/syəw-* “to give birth, to be born” > PIE *\*sew(H)-/sow(H)-/su(H)-* “to give birth”; PK *\*šw-* “to give birth, to be born”; PD *\*cē(y)-* “son, child, lad, youth”.



170. PN *\*syir-/\*syer-* “to twist, to turn, to tie, to bind; band, cord, any cord-like object: sinew, tendon, nerve, vein” > PIE *\*ser-/\*sor-/\*sr-* “band, cord, string, thread; sinew, tendon, vein”; PAA *\*syar-/\*syər-* “to twist, to turn, to tie, to bind; band, cord, any cord-like object: sinew, tendon, nerve, vein”; PA *\*sir-* “sinew, tendon”; S *šer* “to tie, to bind”, *šér(-šér)* “to tie, to bind”, *šèr-šèr* “chain”, *šèr-šèr-apin* “chain”, *šir-šir* “band, chain”.
171. PN *\*zaw-/\*zəw-* “to pass, to pass on, to pass away, to remove” > (?) PIE (*\*d[h]w-iH-* >) *\*d[h]wī-* “to dwindle, to wither, to wane”; PK *\*z<sub>1</sub>w-el-* “old”, *\*z<sub>1</sub>w-en-* “to grow old”; PAA *\*zaw-/\*zəw-* “to pass, to pass on, to pass away, to remove”.
172. PN *\*zaʔ-/\*zəʔ-* “to waste away; to become exhausted, faded, withered, weak, weary, drowsy” > PIE (*\*d[h]eʔ-/\*d[h]oʔ-* >) *\*d[h]ē-/\*d[h]ō-* “to waste away; to become exhausted, faded, withered, weak, weary”; PK (*\*zʔ-in-* >) *\*z<sub>1</sub>-in-* “to lie down, to go to sleep”; PAA *\*zaʔ-/\*zəʔ-* “to waste away; to become exhausted, faded, withered, weak, weary”; PD *\*cā-* “to die, to fade, to wither, to be exhausted”.
173. PN *\*zim-/\*zem-* “to be sour, bitter, pungent, sharp” > PK *\*z<sub>1</sub>m-* “salt”, *\*z<sub>1</sub>m-ar-* “vinegar”; PFU *\*čemə* “sour; to become sour”.
174. PN *\*zag-/\*zəg-* “to strike, to beat, to drive (away)” > PK *\*z<sub>1</sub>ger-* “to beat, to strike”; PAA *\*zag-/\*zəg-* “to push, to shove, to urge, to drive”; S *zag* “to drive away, to expel”.
175. PN *\*zim-/\*zem-* “to blow, to play (a wind instrument)” > PIE *\*d[h]em-/\*d[h]om-/\*d[h]m-* “to blow, to play (a wind instrument)”; PAA *\*zam-/\*zəm-* “to blow, to play (a wind instrument)”; PD *\*cem-* “to sneeze”.
176. PN *\*zar-/\*zər-* “to gush forth, to burst forth, to spurt” > PIE *\*d[h]er-/\*d[h]or-/\*d[h]r-* “to gush forth, to burst forth, to spurt”; PAA *\*zar-/\*zər-* “to gush forth, to burst forth, to spurt”; PD *\*cāl-* “to flow, to run (off or out), to issue, to drop or ooze out, to drizzle”; S *zar* “to run, flow, leak, or spill out; to spring forth, to issue (from), to flow or gush forth; to bubble over”; PE *\*carvar* “current” (cf. Central Alaskan Yupik *carvaq* “current, rapidly flowing stream”, *carvə-*, *carvar-* “flow [of current]”).
177. PN *\*c[h]uk[h]-/\*c[h]ok[h]-* “to bend, to turn, to wind, to twist; to close, to shut, to cover” > (?) PIE *\*t[h]ok[h]-* “to bend, to turn, to wind, to twist”; PAA *\*c[h]ak[h]-/\*c[h]ək[h]-* “to bend, to turn, to wind, to twist; to close, to shut, to cover”; PU *\*čukka-* “to bend, to twist, to turn, to close, to shut” PE *\*cukak-* “to be tight or to tighten” (cf. Eastern Canadian Inuit *sukak-* “to tighten, to stretch; to be tightened, to be stretched; to be wound up [clock]”).

178. PN *\*c[h]al-/c[h]əl-* “to empty, to leave, to leave behind, to abandon; to set free, to release, to let go; freedom from, leisure; empty, free (from), unoccupied, at leisure” > (?) PIE *\*t[h]el-/t[h]ol-/t[h]l-* (extended form in Germanic *\*t[h]l-ew-*) “to leave, to abandon, to let go, to depart from”; PK *\*c<sub>1</sub>al-* “to empty, to get rid of; to have spare time”; PAA *\*c[h]al-/c[h]əl-* “to empty, to get rid of”; S *sal* “to set free, to release, to let loose, to let go; to leave, to abandon”.
179. PN *\*c'il-/c'el-* “to stretch out, to extend, to exceed; to be wealthy, to prosper, to do well” > PAA *\*c'al-/c'al-* “to stretch out, to extend, to exceed; to be wealthy, to prosper, to do well”; PD *\*cel-* “prosperity”; S *zil* (“to prosper, to do well” >) “good; to do good, to please”; PE *\*ciləγ-* “to be thick or wide”.
180. PN *\*c'ar-/c'ər-* “to be or become visible, clear, evident; to reveal, to make known, to make clear, to clarify” > PIE *\*t'er-/t'or-/t'ṛ-* “to be or become visible, clear, evident”, *\*t'er-k[h]-/t'or-k[h]-/t'ṛ-k[h]-* “to be or become visible, clear, evident, to see clearly”; PAA *\*c'ar-/c'ər-* “to be or become visible, clear, evident”; PD *\*cār-* “to reveal, to make known, to make clear, to clarify”.
181. PN *\*hac'-/həc'-* “to seize, to grasp, to take hold of, to pick, to pluck” > PIE *\*h<sub>1</sub>het'-* [*\*h<sub>1</sub>hat'-*] “crop, grain”; PAA *\*hac'-/həc'-* “to harvest, to reap”; PD *\*ec-* “to pick, to pluck”; S *ha-za* “to seize, to grasp, to take hold of”.
182. PN *\*c'ab-/c'əb-* “to press, squeeze, stick, tie, bind, or join firmly together” > PK *\*c'<sub>1</sub>eb-* “to glue”, *\*c'<sub>1</sub>ebo-* “glue”; PAA *\*c'ab-/c'əb-* “to press, squeeze, stick, tie, bind, or join firmly together”.
183. PN *\*c'ar-/c'ər-* “to cut, to cut off, to cut through, to cut into” > PK *\*c'<sub>1</sub>er-* (“to cut into, to scratch, to carve, to engrave” >) “to write”; PAA *\*c'ar-/c'ər-* “to cut, to cut off, to cut through, to cut into”.
184. PN *\*sam-/səm-* “to resemble, to be like” > PIE *\*sem-/som-/sm-* “like, same”; PAA *\*sam-/səm-* “to resemble, to be like”.
185. PN *\*sag-/səg-* “to reach, to arrive at, to attain, to achieve, to get, to obtain” > PIE *\*seg[h]-/sog[h]-* “to get, to obtain”; PAA *\*sag-/səg-* “to reach, to arrive at, to attain, to achieve, to get, to obtain”; PU *\*saya-* “to reach, to arrive at, to achieve, to get, to obtain”.
186. PN *\*sal-/səl-* “to spring, to leap, to jump” > PIE *\*sal-, \*sel-* “to spring, to leap, to jump”; Afroasiatic: Semitic: Hebrew *sālaḏ* “to spring, to leap, to bound”.

187. PN *\*san-/sən-* “to perceive, to sense” > Indo-European: Latin *sentīō* “to feel, to experience, to perceive”, *sēnsus* “sense, feeling, perception”; PAA *\*san-/sən-* “to smell”.
188. PN *\*sab-/səb-* “seven” > PIE (*\*seb[h]-t[h]ṛ*) > [with voicing assimilation] *\*sep[h]-t[h]ṛ* “seven”; PAA *\*sab-* “seven”.
189. PN *\*sin-/sen-* “sinew, tendon” > PIE *\*senHw-*, *\*sneHw-* (> *\*snēw-*) “sinew, tendon”; PU *\*senä/\*sona* “sinew, tendon”.
190. PN *\*saw-/səw-* “to drink, to swallow” > PIE *\*sew(H)-/\*sow(H)-/\*su(H)-* “to drink, to swallow”, *\*sw-el-* “to swallow”; PK *\*s<sub>1</sub>w-* “to drink”, *\*s<sub>1</sub>w-am-/\*s<sub>1</sub>w-m-* “to drink”; PAA *\*saw-/səw-* “to drink, to swallow”.
191. PN *\*saw-al-/\*saw-əl-* “to wet, to moisten, to flow” (derivative of the preceding) > PIE *\*swel-/\*sul-* “to wet, to moisten, to flow; (n.) liquid, moisture”; PK *\*s<sub>1</sub>wel-* “wet, moist”, *\*s<sub>1</sub>wel-* “to wet, to moisten”.
192. PN *\*sar-/sər-* “to split, to rip apart, to tear asunder” > PIE *\*ser-/\*sor-/\*sṛ-* “to split, to rip apart, to tear asunder”, *\*sor-g[h]-* “to wound, to tear”; PK *\*s<sub>1</sub>ar-/\*s<sub>1</sub>r-* “to destroy”; PAA *\*sar-/\*sər-* “to split, to rip apart, to tear asunder”; PFP *\*särə-* “to break”.
193. PN *\*s<sup>w</sup>ak[h]<sub>s<sup>w</sup>-</sub>*/\*s<sup>w</sup>ək[h]<sub>s<sup>w</sup>- “six” > PIE (*\*s<sup>w</sup>ek[h]<sub>s<sup>w</sup>-</sub>* >) *\*s<sup>w</sup>ek[h]<sub>s-</sub>* “six”; PK (*\*s<sup>w</sup>ek[h]<sub>s<sup>w</sup>-</sub>* >) *\*ek[h]<sub>s<sub>1</sub>w-</sub>* “six”.</sub>
194. PN *\*sa-/sə-* demonstrative pronoun stem: “this, that” > PIE *\*so-*, (f.) *\*seA* [*\*saA*] (> *\*sā*) demonstrative stem: “this, that”; PK *\*s<sub>1</sub>-* pronoun stem; PAA *\*sa-/sə-* demonstrative pronoun stem; PFU *\*sä* “he, she, it”.
195. PN *\*saḥ-/səḥ-* “to examine, to consider, to try to find out, to try to understand, to think about” > PIE *\*seḥh-k’-* [*\*saḥh-k’-*] (>*\*sāk’-*) “to examine, to consider, to try to find out, to try to understand, to think about”; Afroasiatic: Egyptian *shj* “to remember, to call to mind, to think about,” *shjw* “remembrance, memory”; PA *\*sā-* “to think, to consider, to count”.
196. PN *\*saw-/səw-* “to sigh, to pant, to gasp, to breathe deeply” > PIE *\*sew-/\*sow-/\*su-* “to sigh, to pant, to gasp”; PK *\*s<sub>1</sub>w-er-* “deep breath, sigh”; Afroasiatic: Egyptian *swḥ* “wind, air, breath”.
197. PN *\*saw-/səw-* “to sleep, to rest” > PIE *\*sw-ep[h]-/\*sw-op[h]-/\*su-p[h]-* “to sleep”; PK *\*s<sub>1</sub>w-en-* “to rest”; Afroasiatic: Egyptian *swḥ* “to spend the night”.

198. PN *\*sih-/seh-* “to separate into (equal) parts, to divide” > PIE *\*sih-* [*\*seh-*] (> *\*sē-*) “separately, apart”, *\*sih-mi-* [*\*seh-mi-*] (> *\*sē-mi-*) “half”, *\*sih-t-* [*\*seh-t-*] (> *\*sē-t-*) “division, section”; PK *\*s,x-w-a-* “other, different”.
199. PN *\*sig-/seg-* “to swell, to fill up, to overflow, to flow forth” > PAA *\*sag-/sag-* “to swell, to fill up, to overflow, to flow forth”; PA *\*sigē-* “to urinate”.
200. PN *\*tʃ[h]ir-/tʃ[h]er-* “highest point, highest rank; to be highly esteemed, to be eminent” > PIE *\*k[h]er-/k[h]or-/k[h]r-* “highest point, top, summit, head, peak, horn”; PAA *\*tʃ[h]ar-/tʃ[h]ər-* “highest rank”; PD *\*cir-* “to be eminent, illustrious; to surpass; to be abundant; pre-eminence, abundance, wealth”; PA *\*kir-* “mountain(-side), edge”.
201. PN *\*tʃ[h]ay-/tʃ[h]əy-* “to advance, to proceed, to go on, to move forward, to continue (in time), to grow old” > PIE *\*k[h]ey-/k[h]oy-/k[h]i-* “gray-haired, old”; PAA *\*tʃ[h]ay-/tʃ[h]əy-* “to grow old, to age, to turn gray (hair)”; PD *\*cā(y)-* “to proceed, to advance, to go on, to move forward, to continue (in time), to grow old”.
202. PN *\*tʃ[h]im-/tʃ[h]em-* “to enclose, to wrap, to contain” > PIE *\*k[h]em-/k[h]om-* “to enclose, to contain”; PAA *\*tʃ[h]am-/tʃ[h]əm-* “to wrap, to enclose, to contain”; PD *\*cim-* “to wrap, to contain, to restrain”.
203. PN *\*tʃ[h]unk[h]-/tʃ[h]onk[h]-* “to hook up, to hang; hanging, dangling; peg, hook” > PIE *\*k[h]onk[h]-* “to hook up, to hang; peg, hook”; Afroasiatic: Semitic: Arabic *šankala* (< *\*tʃ[h]ank[h]-al-*) “to hook up”, *šankal* “peg, hook”; PD *\*cuñk-* “end of cloth left hanging out, a dangling tatter”.
204. PN *\*tʃ[h]iŋr-/tʃ[h]eŋr-* “hair” > PIE *\*k[h]iŋr- [k[h]eŋr-]* (> *\*k[h]ēr-*) “hair” (found only in Germanic); PAA *\*tʃ[h]aŋr-/tʃ[h]əŋr-* “hair”.
205. PN *\*tʃ[h]irʷ-/tʃ[h]erʷ-* “to grow, to grow up, to thrive, to flourish” > PIE *\*k[h]er-/k[h]or-/k[h]r-* “to grow, to grow up, to thrive, to flourish”; PAA *\*tʃ[h]ar-/tʃ[h]ər-* “to grow, to mature”; PD *\*cer-* “to thrive, to flourish, to grow, to grow well, to prosper, to be fertile, to increase, to be superabundant”.
206. PN *\*tʃ[h]ar-/tʃ[h]ər-* “to cause harm, to injure, to cause strife; injury, harm, strife” > PIE *\*k[h]or-mo-* “injury, harm, suffering”; PAA *\*tʃ[h]ar-/tʃ[h]ər-* “to cause harm, to injure, to cause strife”; PD *\*ceragu* “calamity, misfortune”; PA *\*kere-* “to cause strife, contention; (n.) strife, anger, dispute”.

207. PN *\*tʃ[h]ar-/tʃ[h]ər-* “to burn, to roast” > PIE *\*k[h]er-/k[h]or-/k[h]r-* “to burn, to roast”; PK *\*xr-ak-* “to roast, to fry, to char”; PAA *\*tʃ[h]ar-/tʃ[h]ər-* “to burn, to roast”; PFU *\*sʷarə-* “to dry up; to become dry, parched, or arid”.
208. PN *\*nitʃ[h]-/netʃ[h]-* “to rise, to arise; to lift, to raise; to move” > PIE *\*nek[h]-/nok[h]-* “to bear, to carry, to convey”; PAA *\*natʃ[h]-/nətʃ[h]-* “to rise, to arise; to lift, to raise; to move”; PD *\*nik-* “to lift up, to raise, to get up from sleep”; PA *\*negū-* “to move from one place to another, to wander about, to migrate”.
209. PN *\*tʃ[h]arʷ-/tʃ[h]ərʷ-* “to cut, to cut into” > PK *\*xarx-* “to saw; (n.) saw”; PAA *\*tʃ[h]ar-/tʃ[h]ər-* “to cut, to slice”; PA *\*karʷ-* “to scratch, to dig”.
210. PN *\*tʃ[h]arʷ-at-/tʃ[h]ərʷ-at-* “to cut into, to make incisions” (extended form of the preceding) > PIE *\*k[h]ert-* (“to cut into, to make incisions, to carve” >) “craft, trade; craftsman, artisan”; PAA *\*tʃ[h]arat-/tʃ[h]ərat-/tʃ[h]arət-/tʃ[h]ərət-* “to cut, to cut into, to incise, to make incisions”.
211. PN *\*tʃ[h]il-/tʃ[h]el-* “to see” > PK *\*xel-/xil-* “to open the eyes, to see”; Afroasiatic: PHEC *\*lell-* “to appear, to be seen”; PU *\*sʷilmā* “eye”.
212. PN *\*tʃ[h]ut-/tʃ[h]ot-* “to cut” > PK *\*xotʷr-* “to cut, to clip”; PAA *\*tʃ[h]at-/tʃ[h]ət-* “to cut, to split”.
213. PN *\*tʃ[h]aḥ-/tʃ[h]əḥ-* “(young) sheep or goat” > PIE *\*k[h]eḥh-k-/k[h]aḥh-k-]* (> *\*k[h]āk-*) “(young) goat, kid”; PAA *\*tʃ[h]aḥ-/tʃ[h]əḥ-* “(young) sheep or goat”.
214. PN *\*bitʃ[h]-/betʃ[h]-* “to slit, to split, to prick (tr.); to split apart, to burst open (intr.)” > Afroasiatic: PS *\*batʃ[h]-at-* “to slit”; PFU *\*peḍä-* “to prick”; PD *\*pik-* “to break in pieces; to burst”.
215. PN *\*tʃ'im-/tʃ'em-* “to join, bind, or unite together” > PIE *\*k'em-/k'om-/kṃ-* “to join together, to unite”; PAA *\*tʃ'am-/tʃ'am-* “to join together”; PU *\*ḍimā* “glue”; S *dim* “band, binding; rope, cord, knot”, *dim-ma* “to tie together, to fasten, to bind”, *dim-mā* “band, rope, cord”.
216. PN *\*tʃ'ar-as-/tʃ'ər-as-* (?) “to bite, to gnaw” > PIE *\*k'ras-* “to bite, to gnaw, to eat”; PAA *\*tʃ'aras-/tʃ'əras-/tʃ'arəs-/tʃ'ərəs-* “to bite”.
217. PN *\*tʃ'al-/tʃ'əl-* “to be bent, curved, round” > PIE *\*k'el-/k'ol-/k'ḷ-* “bent, curved, round”; PAA *\*tʃ'al-/tʃ'əl-* “to be bent, curved, round”.

218. PN *\*tʃ'uk[h]/\*tʃ'ok[h]*- “to push, to shove, to thrust in” > PFU *\*δʏukkə- (\*δʏokkə-)* “to put (in), to stick, to thrust (in)”; PD *\*tuk-* “to push, to shove”.
219. PN *\*gub-/gob-* “highest point, summit, top” > PIE *\*g[h]eb[h]*- “gable, head, pinnacle”; PAA *\*gab-/\*gəb-* “highest point, pinnacle”; PD *\*kop-* “topmost part”; (?) S *gub* “to stand, to erect”.
220. PN *\*gasʏ-/gəsʏ-* “to touch, to feel, to handle” > PIE *\*g[h]es-/g[h]os-* “hand”; PAA *\*gasʏ-/gəsʏ-* “to touch, to feel, to handle”.
221. PN *\*gad-/gəd-* “to force, drive, or press together; to join; to unite; to gather (together); to collect” > PIE *\*g[h]ed[h]/\*g[h]od[h]*- “to force, drive, or press together; to join; to unite; to gather (together); to collect”; PAA *\*gad-/\*gəd-* “to force, drive, or press together; to join; to unite; to gather (together); to collect”.
222. PN *\*gar-/gər-* “to take, to take hold of; to take away, to carry off, to remove” > PIE *\*g[h]er-/g[h]or-/g[h]r-* “to take, to take hold of, to seize; to take away, to carry off, to remove”; PAA *\*gar-/gər-* “to take, to take hold of; to take away, to carry off, to remove”; PD *\*ker-* “to take a handful, to scoop up with the hand, to gather up with the hand”; PA *\*gār(a)* “hand, arm”.
223. PN *\*gir-/ger-* “to scratch, to scrape” > PIE *\*g[h]er-/g[h]or-/g[h]r-* “to scratch, to scrape”, *\*g[h]reb[h]/\*g[h]rob[h]*- “to scratch, to scrape”, *\*g[h]rem-/g[h]rom-* “to scrape”; PAA *\*gar-/gər-* “to scratch, to scrape”; PD *\*kir-* “to scratch, to scrape”.
224. PN *\*gun-/gon-* “to perceive, to notice, to be aware of” > PK *\*gn-* “to hear, to understand”; PA *\*guni-* “to think, to grieve”.
225. PN *\*garʏ-/gərʏ-* “to swell, to increase, to grow” > PIE *\*g[h]r-eʔ/\*g[h]r-oʔ-* (>*\*g[h]rē-/g[h]rō-*) “to grow”; PAA *\*gar-/gər-* “to grow old”; PD *\*kaṛ-* “to swell, to rise, to increase, to grow thick; (n.) bamboo seedling, bamboo sapling, bamboo shoot; a swelling, excess, abundance”; PY (Sirenikski) *\*qəR-* “height”; PY *\*qəRAR-* and *\*qəRatar-* “to rise up”, *\*qəRUR-* “to inflate”.
226. PN *\*gat'-/gət'-* “to take (with the hand), to grasp” > PIE *\*g[h]et'-/g[h]ot'-*, (with nasal infix) *\*g[h]je-n-t'-* “to take (with the hand)”; PAA *\*gat'-/gət'-* “to take”; PFU *\*kāte* “hand”; PD *\*kat-* “to seize, to grasp”, *\*ketkā* (> *\*kekkā* > *\*khekkhā* in Kurux and Malto) “hand”, *\*kay* “hand, arm”.

227. PN *\*gaw-al-/\*gəw-al-* “to twist, to turn, to bend” > PIE *\*g<sup>h</sup>]wel-/ \*g<sup>h</sup>]wol-/ \*g<sup>h</sup>]w<sub>l̥</sub>-* “to turn; to twist; to bend; to be or become twisted, curved, crooked, bent”; PK *\*gwel-* “snake”; PAA *\*gaw-al-/\*gəw-al-* “to perform a turning movement”; PU *\*kula* “(tape)worm”.
228. PN *\*gil-/\*gel-* “to shine, to glisten” > PIE *\*g<sup>h</sup>]el-/ \*g<sup>h</sup>]ol-/ \*g<sup>h</sup>]l̥-* “to shine, to glisten”; PAA *\*gal-/\*gəl-* “to be or become shining, bright, clear, clean; to make shining, bright, clear, clean”; Uralic: Finnish *kiiltää* “to shine, to glisten, to glimmer, to gleam”, *kiiltua* “glimmer, glow, glint”, *kiilto* “luster, gloss, polish”, *kiiltävä* “shiny, glossy, bright”; PA *\*gil-* “to shine, to beam, to glitter, to glow, to gleam, to flash”; PE *\*qilay-* “sky”; Aleut *qila-X* “morning”, *qilam* “in the morning”, *qilayan* “tomorrow”.
229. PN *\*gul-/\*gol-* “to cut, to cut off, to pluck off, to break off” > PIE *\*g<sup>h</sup>]el-/ \*g<sup>h</sup>]ol-/ \*g<sup>h</sup>]l̥-* “to cut”; PK *\*gl-* “to tear, to rend, to break”; PAA *\*gal-/\*gəl-* “to cut, to cut off, to pluck off, to break off”; PD *\*kol-* “razor”.
230. PN *\*gal-/\*gəl-* “to tow or drag” (> “to plow”) > PIE *\*g<sup>h</sup>]el-/ \*g<sup>h</sup>]ol-/ \*g<sup>h</sup>]l̥-* “to plow”; PD *\*kalappa* “plow”; PE *\*kaləγ-* and *\*kalət-* “to tow or drag” (cf. Aleut *kalat-* “to drag along the ground”). Note: in *The Nostratic Macrofamily* (1994:393—394), the meaning of the PN form is given as “to scratch, to scrape”. However, the PE cognate makes it seem more likely that the original meaning was “to tow or drag”.
231. PN *\*gur-/\*gor-* (?) “gut, cord” > PIE *\*g<sup>h</sup>]or-/ \*g<sup>h</sup>]r̥-* “gut, cord”; Uralic: Hungarian *húr* “intestine, string”, *hurka* “intestine, sausage”; (?) Yurak Samoyed / Nenets *hurka* “cord, cord made of reindeer tendons”; (?) Tavgi Samoyed / Nganasan *körü* “cord”.
232. PN *\*gud-/\*god-* “to throw, to toss, to shake” > Kartvelian: Georgian *gd-eba* “to throw, to cast, to fling, to toss”; PAA *\*gad-/\*gəd-* “to throw, to cast”; PD *\*kuṭ-* “to throw, to toss, to fling, to shake”.
233. PN *\*gur-/\*gor-* “to stand out, to jut out, to project” > PIE *\*g<sup>h</sup>]er-/ \*g<sup>h</sup>]or-/ \*g<sup>h</sup>]r̥-*, *\*g<sup>h</sup>]r-eE-/ \*g<sup>h</sup>]r-oE-* (> *\*g<sup>h</sup>]rē-/ \*g<sup>h</sup>]rō-*) “to stand out, to jut out, to project”, *\*g<sup>h</sup>]ers-/ \*g<sup>h</sup>]ors-/ \*g<sup>h</sup>]rs-* “to bristle”; PK *\*gora-* “hill, mound”; (?) PAA *\*gar-/\*gər-* “heap, mound, mountain”.
234. PN *\*gaʔ-/\*gəʔ-* “to be empty, void, lacking, wanting” > PIE *\*g<sup>h</sup>]eʔ-/ \*g<sup>h</sup>]oʔ-* (> *\*g<sup>h</sup>]ē-/ \*g<sup>h</sup>]ō-*), also *\*g<sup>h</sup>]eʔ-y-/ \*g<sup>h</sup>]oʔ-y-* “to be empty, void, lacking, wanting”; Afroasiatic: Egyptian *gʒw* “to be narrow, constricted; to languish; to lack, to be lacking; to deprive”, *gʒw* “lack”, *gʒwt* “lack, want”, *ngʒw* “without”, *ngʒ* “to lack, to want, to be short of”.
235. PN *\*gur-/\*gor-* “to rumble, to roar, to growl, to gurgle” > PIE *\*g<sup>h</sup>]ur-* “to rumble, to roar, to growl, to gurgle”; PK *\*gḡgwin-* “to thunder; (n.) thunder”, *\*gurgwal-* “to thunder, to

- rumble, to roar; (n.) thunder”; PAA *\*gar-/\*gər-* “to rumble, to roar, to growl, to gurgle”; PD *\*kur-* an imitative sound: “to bark, to snore, to snarl, to growl”; Altaic: Manchu *gur seme* “snarling, growling, talking too much”.
236. PN *\*guw-ir-/\*gow-ir-/\*guw-er-/\*gow-er-* “wild animal, wild beast” > PIE (*\*guw-ér-* >) *\*g<sup>h</sup>iwē-* “wild animal, wild beast”; (?) PD *\*kur-* “antelope”; PA (*\*gów-ir-* >) *\*göre* “wild animal, wild beast”.
237. PN *\*gus-/\*gos-* “to go outside of or forth from; to make to go outside of or forth from, to drive away, to chase away” > PIE *\*g<sup>h</sup>jos-t<sup>h</sup>i-* (“outsider” >) “stranger” > “guest”; Afroasiatic: PSC *\*gus-* “to drive out, to chase away”.
238. PN *\*guw-/\*gow-* “to observe, to notice, to watch, to pay attention to, to heed, to be or become aware of” > PIE *\*g<sup>h</sup>ow-* “to observe, to notice, to watch, to pay attention to, to heed, to be or become aware of”; PK *\*gu-* “to be accustomed to, to become used to; to train, to instruct, to teach”.
239. PN *\*gur-/\*gor-* “to turn, to twist, to wind, to wrap, to roll” > PK *\*gor-/\*gr-* “to roll, to rotate”; PAA *\*gar-/\*gər-* “to roll, to revolve”; PU *\*kura-* “to twist, to turn, to plait, to tie (together), to twine together, to braid”; PA *\*göre-* “to turn, to twist, to wind, to wrap”; S *gur* “to bend (tr.)”, *gur* “to wind up, to roll up; to turn, to twist”, *gur* “basket”, *gúr* “ring, circle”, *gúr* “to bend, to bow (intr.)”, *gurú* “to wriggle, to writhe”, *gurum* “to bend, to bow (intr.); to bend (tr.)”.
240. PN *\*gab-/\*gəb-* “to cook, to roast, to boil, to burn” > PK *\*gab-/\*gb-* “to cook, to boil”; PAA *\*gab-/\*gəb-* “to cook, to roast, to burn”.
241. PN *\*k<sup>h</sup>ja-/\*k<sup>h</sup>ǝ-* demonstrative pronoun stem > PIE *\*k<sup>h</sup>je-/\*k<sup>h</sup>jo-*, *\*k<sup>h</sup>ji-* demonstrative pronoun stem; PK *\*-k<sup>h</sup>j-* pronoun stem; PAA *\*k<sup>h</sup>ja-/\*k<sup>h</sup>ǝ-* demonstrative pronoun stem.
242. PN *\*k<sup>h</sup>ap<sup>h</sup>-/\*k<sup>h</sup>ǝp<sup>h</sup>-* “to take, to seize; hand” > PIE *\*k<sup>h</sup>ap<sup>h</sup>-* “to take, to seize”; PAA *\*k<sup>h</sup>ap<sup>h</sup>-/\*k<sup>h</sup>ǝp<sup>h</sup>-* “to take, to seize; hand”; PFU *\*kappə-* “to take, to seize, to grasp”, *\*käppä* “hand, paw”; PD *\*kapp-* “to touch, to feel”; PA *\*kap-* “to grasp, to seize”.
243. PN *\*k<sup>h</sup>as-/\*k<sup>h</sup>ǝs-* “to cut” > PIE *\*k<sup>h</sup>es-*, *\*k<sup>h</sup>as-* “to cut”; PAA *\*k<sup>h</sup>as-/\*k<sup>h</sup>ǝs-* “to cut, to cut off, to cut up”.
244. PN *\*k<sup>h</sup>al-/\*k<sup>h</sup>ǝl-* “to make a noise, to sound” > PIE *\*k<sup>h</sup>el-*, *\*k<sup>h</sup>al-* “to call, to summon”; PAA *\*k<sup>h</sup>al-/\*k<sup>h</sup>ǝl-* “to call, to summon”; PD *\*kal-*, (reduplicated) *\*kala-kala* “to make a noise, to sound”; PE *\*qalər-* “to make a characteristic cry (animals)”, *\*qalmar-* “to call to dogs”.



245. PN *\*k[h]al-/ \*k[h]əl-* “to point out, to make clear, to make known, to disclose, to explain” > PAA *\*k[h]al-/ \*k[h]əl-* “to point out, to make clear, to make known, to reveal, to disclose, to explain”; PD *\*kal-* “to learn, to study; to teach”; Altaic: Mongolian *kele-* “to say, to speak, to talk”; Chuvash *kala-* “to speak”.
246. PN *\*k[h]ar-/ \*k[h]ər-* “to cut” > PIE *\*k[h]er-/ \*k[h]or-/ \*k[h]r̥-* “to cut off, to cut down”; PAA *\*k[h]ar-/ \*k[h]ər-* “to cut”; PA *\*ker-ti-* “to cut into, to carve, to notch”.
247. PN *\*k[h]ar-/ \*k[h]ər-* “skin, hide; bark, rind” (derivative of the preceding) > PIE *\*k[h]er-/ \*k[h]or-/ \*k[h]r̥-* “skin, hide; bark, rind”; PFU *\*kere* “bark”.
248. PN *\*k[h]al-/ \*k[h]əl-* “to guard, to watch, to hold (back)” > PIE *\*k[h]el-/ \*k[h]ol-* “to guard, to watch, to hold (back)”; PAA *\*k[h]al-/ \*k[h]əl-* “to guard, to watch, to hold (back)”; S *kal* “to hold, to keep, to retain”.
249. PN *\*k[h]iw-/ \*k[h]ew-* “stone, rock” > PK *\*k[h]wa-* “stone, rock”; PFU *\*kiwe* “stone”.
250. PN *\*k[h]aw-/ \*k[h]əw-* “to swell, to expand, to inflate, to grow, to increase” > PIE *\*k[h]ew-/ \*k[h]ow-/ \*k[h]u-* “to swell, to expand, to inflate, to grow, to increase”; PAA *\*k[h]aw-/ \*k[h]əw-* “to swell, to expand, to inflate, to grow, to increase”; PD *\*kō-* “mountain; above, over, up, on top of”.
251. PN *\*k[h]unʷ-/ \*k[h]onʷ-* “bee, honey” > PIE *\*k[h]ṇH-k[h]o-* “honey, honey-colored”; PAA *\*k[h]an-/ \*k[h]ən-* “bee”; PD *\*kuṇ-* “bee”.
252. PN *\*k[h]ay-* “alone” > PIE *\*k[h]ay-*, (extended form) *\*k[h]ay-wo-* “alone”; PAA *\*k[h]ayw-* “alone”; PD *\*kay-* “widow”.
253. PN *\*k[h]ab-/ \*k[h]əb-* “hoof, hoofed animal” > PIE *\*k[h]ab-ro-* > (with progressive voicing assimilation) *\*k[h]ap[h]-ro-* “he-goat, buck”, *\*k[h]ab-* > (with progressive voicing assimilation) *\*k[h]āp[h]-* “hoof”; PAA *\*k[h]ab-/ \*k[h]əb-* “hoof, hoofed animal”.
254. PN *\*k[h]am-/ \*k[h]əm-* “to seize, to grasp, to grip, to clutch” > PIE *\*k[h]em-t[h]-/ \*k[h]om-t[h]-/ \*k[h]m̥-t[h]-* “to seize, to grasp, to grip, to clutch; hand”; PAA *\*k[h]am-/ \*k[h]əm-* “to seize, to grasp, to grip, to clutch”; PFU *\*kāme(-ne)* “hand; palm, flat of the hand”; PD *\*kam-* “to seize”.
255. PN *\*k[h]um-/ \*k[h]om-* “to heap up, to pile up, to accumulate” > PAA *\*k[h]am-/ \*k[h]əm-* “to heap up, to pile up, to accumulate”; PD *\*kum-* “to heap up, to gather, to accumulate; (n.) heap, crowd, pile, collection”.

256. PN *\*k[h]am-/k[h]əm-* “to gather together, to collect” > PIE *\*k[h]em-/k[h]om-/k[h]m-* “to gather together”, *\*k[h]om-* “together with”; Afroasiatic: Semitic: Akkadian *kamāsu* “to gather, to collect, to bring in (barley, persons, animals, objects, or documents)”; PA *\*kam-* “to accumulate, to collect, to gather together”.
257. PN *\*k[h]aŋ-/k[h]əŋ-* (?) “to sing, to sound” > PIE *\*k[h]an-* “to sing, to sound”; Afroasiatic: Egyptian *kny* “to call”; PU *\*kaŋa-* “to call”; PD *\*kaŋ-* “to sound, to tinkle, to rattle, to jingle”.
258. PN *\*k[h]am-/k[h]əm-* “to work, to labor, to toil; to make, to do” > PIE *\*k[h]mH-* “to work, to toil, to labor”; PK *\*k[h]am-/k[h]m-* “to make, to do”.
259. PN *\*k[h]ay-/k[h]əy-* “to put, to place, to set, to lay; to be placed, to lie” > PIE *\*k[h]ey-/k[h]oy-/k[h]i-* “to lie, to be placed”; PAA *\*k[h]ay-/k[h]əy-* “to put, to place, to set, to lay”; PFU *\*kuyə-* “to lie”; PD *\*kē-* “to lie, to lie down, to repose, to rest”.
260. PN *\*k[h]ul-/k[h]ol-* “to hear” > PIE *\*k[h]l-ew-/k[h]l-ow-/k[h]l-u-* “to hear”; PFU *\*kule-* “to hear”; PD *\*kēl-* “to hear, to listen”; PA *\*kulk-* “ear, earwax”.
261. PN *\*k[h]un-k’-/k[h]on-k’-* “to be bent, curved, crooked; hook” > PIE *\*k[h]enk’-/k[h]onk’-* “hook”; PD *\*koŋk-* “hook, clasp”.
262. PN *\*k[h]ay-/k[h]əy-* “heat; to be or become warm or hot; to make warm, to heat” > PIE *\*k[h]ay-* “heat; to heat”; PU *\*keyä-* “to cook, to boil”; PD *\*kā(y)-* “to grow hot, to burn”.
263. PN *\*k[h]ar-/k[h]ər-* “to twist, to turn, to wind” > PIE *\*k[h]er-/k[h]or-/k[h]r-*, *\*(s)k[h]er-/\*(s)k[h]or-/\*(s)k[h]r-*, “to twist, to turn, to wind”; PAA *\*k[h]ar-/k[h]ər-* “to twist, to turn, to wind”; PFU *\*kerä-* “round; to turn, to twist, to wind”, *\*kere* “any round thing or object”; PD *\*kar-* “to whirl, to spin, to turn around”.
264. PN *\*k[h]ar-/k[h]ər-* “edge, side, bank” (probably a derivative of the preceding) > PIE *\*k[h]er-/k[h]or-/k[h]r-* “edge, shore, bank”; Afroasiatic: Semitic: Geez *karir*, *korār*, *karer*, *kerār*, *kʷarir* “(round) hill, ravine, rock”; Uralic: Selkup Samoyed *kery* “edge, brim”; PD *\*karay* “shore, bank, border, edge”; S *kar* “embankment, quay-wall, wall along a canal or moat, mooring-place, harbor”.
265. PN *\*k[h]ur-/k[h]or-* “blood” > PIE *\*k[h]r-ew-H-/k[h]r-ow-H-/k[h]r-u-H-* (> *\*k[h]rū-*) “bloody, raw”; PD *\*kuruti* “bloody, red-color”; S *gu-ru-un*, *guru<sub>II</sub>-un*, *kurin* “blood”.

266. PN *\*k[h]alʷ-/k[h]əʷ-* “to rob, to steal, to hide” > PIE *\*k[h]l-ep[h]-/k[h]l-op[h]-* “to rob, to steal, to hide”; PD *\*kaʷ-* “to rob, to steal, to deceive”.
267. PN *\*k[h]ad-/k[h]əd-* “to twist, to wind, to wrap, to bend” > PIE *\*k[h]ad-* > (with progressive voicing assimilation) *\*k[h]at[h]-* “to twist, to bend together, to fasten, to tie”; PK *\*k[h]ad-/k[h]d-* (“to be or become bent, twisted, crooked” >) “to be wrong, to be mistaken”; PAA *\*k[h]ad-/k[h]əd-* “to cover, to wrap”; PD *\*kaʰi* “protection, shield”, *\*kaʰikay* “bolt, pin”, *\*kaʰt-* “to tie, to bind, to fasten; to clasp, to yoke; to shut”; PA *\*ked-* “to put on clothing”; S *kād* “to fasten, to tie, to bind”, *kad*, “to tie, to fasten”.
268. PN *\*k[h]ar-* “hard, strong, firm” > PIE *\*k[h]ar-* “hard, strong, firm”; PAA *\*k[h]ar-* “hard, dry”; PD *\*karu* “strength, power”.
269. PN *\*k[h]ar-* “rough, coarse” > PAA *\*k[h]ar-* “rough, coarse”; PD *\*kar-*, *\*kar-* “rough, harsh, rugged, uneven, unpolished”.
270. PN *\*k[h]an-/k[h]ən-* “to do, make, or prepare in a proper manner; to set straight, to make right”; PIE *\*k[h]on-* “to do, make, or prepare in an efficient, proper manner”; Kartvelian: Georgian *ken-/kn-* “to do, to make”; PAA *\*k[h]an-/k[h]ən-* “to do, make, or prepare in a proper manner; to set straight, to make right; to establish”.
271. PN *\*k[h]ay-/k[h]əy-* (?) “to scoop out; (n.) spoon, ladle”, (extended form) *\*k[h]ay-w-/k[h]əy-w-* (?) “to dig; (n.) cave, pit, hollow” > PIE *\*k[h]aywǵ-t[h]-/k[h]aywǵ-t[h]-* “cave, hollow”; PU *\*kaya* “spoon, ladle, shovel”, PFP *\*koywa-* “to dig”; PD *\*kay-* “ladle, spoon”; PE *\*qayurutar* “ladle”, *\*qayvaq* “ladle”.
272. PN *\*k[h]uŋ-/k[h]oŋ-* “(n.) fat, fatty part of the body” > PK *\*k[h]on-* “fat, brain”; PD *\*kuŋti* “posterior, rump, buttocks”; PA *\*koŋ* “fat at the thighs, rump”.
273. PN *\*k[h]at[h]-/k[h]ət[h]-* “to beat, to strike, to fight” > PIE *\*k[h]at[h]-* “to fight”; Afroasiatic: Egyptian *ktkt* “to beat, to strike”; PD *\*kat-* “to be angry with; (n.) anger, wrath”, *\*kāt-* “to kill, to murder; to cut, to divide; to quarrel, to fight”.
274. PN *\*k[h]ar-/k[h]ər-* “black, dark” > PIE *\*k[h]er-s-/k[h]r̥s-* “black, dark”; PD *\*kar-* “to grow black, to darken, to become dirty; (adj.) black, dark; (n.) blackness, darkness, blot, stain, spot”; PA *\*kara* “black”.
275. PN *\*k'an-/k'ən-* “to get, to acquire, to possess, to create” > PIE *\*k'en-/k'on-/k'ṇ-* “to beget”; PAA *\*k'an-/k'ən-* “to get, to acquire, to possess, to create”; PD *\*kan-* “to bear or bring forth, to beget, to bear children; (n.) young of various animals, young child”; S *gan* “to bear, to bring forth, to give birth to”.

276. PN *\*k'ar-/k'ər-* “to call out, to summon, to cry (out), to shout, to sound” > PIE *\*k'ér-/k'or-/k'ṛ-* “to call out to”; PAA *\*k'ar-/k'ər-* “to call to”; PD *\*kar-* “to sound, to roar, to call”.
277. PN *\*k'iy-/k'ey-* “to break, to split, to crack, to burst open” > PIE *\*k'ey-, \*k'ī-* “to crack, to burst open”; PAA *\*k'ay-/k'əy-* “to break, to split, to crack, to burst open”; PD *\*kīl-* “to rend, to tear, to split, to crack, to burst”, *\*kīr-* “to slit, to tear, to rend, to cut, to gash, to slice; (n.) part, piece, split, rift, slice”.
278. PN *\*k'um-/k'om-* “to pack or press together” > “to take hold of, to grasp, to seize” > PIE *\*k'em-/k'om-/k'm-* “to press together, to seize, to grasp”; PAA *\*k'am-/k'əm-* “to press together, to seize, to grasp”; S *gúm* “to take hold of”.
279. PN *\*k'am-/k'əm-* “to weep, to moan, to lament, to groan” > PIE *\*k'em-/k'om-* “to weep, to lament, to moan”; PAA *\*k'am-/k'əm-* “to weep, to moan, to lament, to groan”.
280. PN *\*k'am-/k'əm-* “to chew, to bite, to eat; to cut to pieces, to crush” > PIE *\*k'em-b[h]/k'om-b[h]/k'm-b[h]-* “to chew (up), to bite, to cut to pieces, to crush”, *\*k'om-b[h]o-s* “tooth, spike, nail”; PAA *\*k'am-/k'əm-* “to chew, to bite, to eat; to cut to pieces, to crush”.
281. PN *\*k'aw-/k'əw-* “to make a round hole in” > PIE *\*k'ew-/k'ow-/k'u-* (also *\*k'ewH-/k'owH-/k'uH- [ > \*k'ū- ]*) “to make a round hole in”; PK *\*k'w-er-, \*k'w-al-* “round”; PAA *\*k'aw-/k'əw-* “to make a round hole in”; PD *\*kavi* “cave”; (?) PY *\*qavir-* “to curve”.
282. PN *\*k'ar-/k'ər-* “to cut: to cut into, to make an incision, to engrave, to notch; to cut off, to sever, to nip off, to clip; to cut in two, to split, to bite” > PIE *\*k'ér-/k'or-/k'ṛ-* “to cut: to cut into, to make an incision, to engrave, to notch; to cut off”; PK *\*k'ṛt'-wṛ-* “to peck, to bite”; PAA *\*k'ar-/k'ər-* “to cut: to cut into, to make an incision, to engrave, to notch; to cut off, to sever, to nip off, to clip; to cut in two, to split, to bite”.
283. PN *\*k'al-/k'əl-* “to suckle, to nourish, to rear”, (derivative) *\*k'al-ow-/k'əl-ow-* “female (in-law)” > PIE *\*k'(ə)lowV-, \*k'(ə)lōC-* “husband's sister”, PIE *\*k'(ə)l-ak[h]t[h]-* “milk”; PAA *\*k'al-/k'əl-* “to suckle, to nourish”; PU *\*kälä(wä)* “sister-in-law”; PD *\*kal-* “a female relative”; Altaic: Uighur *kälin* “daughter-in-law”; Chuvash *kin* (< *kälin*) “bride; wife of the younger brother”; Tungus *kōlii* “sister's husband”.
284. PN *\*k'iry-/k'ery-* “to decay, to wear out, to wither, to waste away, to become old” > PIE *\*k'er(H)-/k'or(H)-/k'ṛ(H)-* “to decay, to wear out, to wither, to waste away, to become old”; PD *\*kiṛ-* “old age; aged person, animal or thing; (adj.) old, aged”.

285. PN *\*k'il-/\*k'el-* “to decrease; to diminish; to become little, small, few”; PAA *\*k'al-/\*k'əl-* “to decrease; to diminish; to be or become little, small, few”; PD *\*kil-* “small, little; a little, some”.
286. PN *\*k'ar-/\*k'ər-* “to gather (together), to collect; to take a handful, to pick, to pluck” > PIE *\*k'er-/\*k'or-/\*k'r-* “to gather (together), to collect; to take a handful”; PK *\*k'er-b-*, *\*k'r-eb-* “to gather, to collect”, *\*k'r-ep[h]-* “to gather, to pick (fruit, flowers)”; Afroasiatic: PS *\*k'ar-* “to gather, to collect”.
287. PN *\*k'ul-/\*k'ol-* “to be or become cold; to freeze” > PIE *\*k'el-/\*k'ol-/\*k'ǵ-* “to be or become cold; to freeze”; PFP *\*kilmä* (*\*kül mā*) “cold, chilly; frost; to become cold, to freeze”; PD *\*kul-* “to be cold; (n.) intense cold, coldness”; PA *\*kül-*, *\*köl-* “to be or become cold; to freeze”.
288. PN *\*k'ab-/\*k'əb-* “to seize, to take hold of; to seize with the teeth, to bite” > PIE *\*k'eb[h]-/\*k'ob[h]-* “to munch, to chew; jaw”; PK *\*k'b-in-* “to bite”; PAA *\*k'ab-/\*k'əb-* “to seize, to take hold of”; PD *\*kapp-* “to seize with the mouth, to bite”; PA *\*kebi-* “to chew, to chew the cud, to ruminate”.
289. PN *\*k'ap[h]-/\*k'əp[h]-* “jaw, jawbone” > PIE *\*k'ep[h]-/\*k'op[h]-* “jaw, mouth”; PK *\*nik'ap[h]-* “lower jaw, chin”; PD *\*kavul* “cheek”.
290. PN *\*k'ur-/\*k'or-* “crane” > PIE *\*k'er-/\*k'r-* “crane”; PU *\*korka* “crane”; PD *\*korku* “crane”.
291. PN *\*k'ak'-* “to cackle, to chatter” > PIE *\*k'ak'-* “to cackle, to chatter”; PK *\*k'ak'a-n-* “to cackle”; PAA *\*k'ak'-* “to cackle, to make a noise”; PD *\*kak-* “to laugh”.
292. PN *\*k'ak'-* “partridge” > PK *\*k'ak'ab-* “partridge”; PAA *\*k'ak'-* “partridge”; PD *\*kak-* “partridge”.
293. PN *\*k'ar-/\*k'ər-* “to twist, to turn, to bend, to wind; to tie (together), to bind; (adj.) curved, bent, crooked” > PIE *\*k'er-/\*k'or-/\*k'r-* “to twist, to turn, to bend, to wind, to tie (together)”; PK *\*m-k'erd-* “breast”, *\*k'ar-/\*k'r-* “to bind, to tie together”; PFU *\*kärz-* “to twist or tie (together), to bind, to thread”; PD *\*karr-* “collection, bundle”, *\*kar-* “lump, mass, knot, clot”; S *garadin*, *kāradin*, *karadin*, “bundle, sheaf”.
294. PN *\*k'al-/\*k'əl-* “to lift, to raise up, to make high, to elevate; lifted up, elevated, high; highest point, top” > PIE *\*k'el-/\*k'ol-/\*k'l-* “to lift, to raise up, to make high, to elevate; highest point, top”; PK *\*k'ǵde* “rock, cliff”; Kartvelian: Svan *k'əltxi* “high”, *nak'lətxi* “height”; PAA *\*k'al-/\*k'əl-* “to lift, to raise up, to make high, to elevate; highest point, top”.

295. PN *\*k'anʷ-/k'ənʷ-* “to observe, to perceive” > PIE *\*k'en-/k'on-/k'ṇ-*, *\*k'n-oH-* (> *\*k'n-ō-*) “to perceive, to understand, to know”; PAA *\*k'an-/k'ən-* “to observe, to perceive”; PD *\*kaṇ-* “eye”, *\*kāṇ-* “to see, to observe, to consider”; (?) PE *\*kaṇirci-* “to understand”.
296. PN *\*k'al-/k'əl-* “to move, to tremble, to shake, to agitate, to stir up, to mix” > PAA *\*k'al-/k'əl-* “to move, to tremble, to shake, to agitate, to stir up, to mix”; PD *\*kal-* “to stir up, to mix; to be stirred up, agitated, confused”.
297. PN *\*k'al-/k'əl-* “to need” > PK *\*k'al-* “to lack, to be short of, to need, to want”; PFU *\*kelke-* “to be necessary; must, ought to”.
298. PN *\*k'ap[h]/k'əp[h]-* “nape of the neck, back of the head” > PK *\*k'ep[h]-a* “nape of the neck, back of the head”; PAA *\*k'ap[h]/k'əp[h]-* “nape of the neck, back of the head”; PI *\*kapəlruq* or *\*kapəlruk* “neck part of animal”.
299. PN *\*k'al-/k'əl-* “to burn, to warm, to cook, to roast” > PIE *\*k'el(H)-/k'ol(H)-/k'ḷ(H)-* “to burn, to scorch, to char”; PAA *\*k'al-/k'əl-* “to burn, to roast”; PD *\*kāl-* “to burn, to scorch, to char, to bake”; Altaic: Mongolian *qala-* “to be or become warm or hot, to be or become warmed up or heated up”, *qalaγun* “hot, warm; heat, warmth, fever”.
300. PN *\*gʷil-/gʷel-* “to glide, to slip, to slide” > PIE *\*g[h]l-ey-/g[h]l-oy-/g[h]l-i-* “to glide, to slip, to slide”; PAA *\*gʷal-/gʷəl-* “to glide, to slip, to slide”; PFU *\*kilɜ* (*\*külɜ*) “smooth, slippery”; PI *\*cilirak-* “to glide”; PY *\*cilur-* “to slide or glide”.
301. PN *\*wagʷ-/wəgʷ-* “to carry, to convey” > PIE *\*weg[h]/wog[h]-* “to carry, to convey, to weigh”; PAA *\*wagʷ-/wəgʷ-* “to carry”; PFU *\*wiye-* “to bring, to carry, to convey”.
302. PN *\*hagʷ-/həgʷ-* “to be pressed or weighed down; to be oppressed; to be disheartened, distressed, afflicted, troubled” > PIE *\*h̥eg[h]-* [*\*h̥hag[h]-*] “to be weighed down, oppressed, fearful”; PAA *\*hagʷ-/həgʷ-* “to be pressed or weighed down; to be oppressed; to be disheartened, distressed, afflicted, troubled”; PD *\*ag-* “to press firmly, to hold firmly; to tremble, to fear; (n.) affliction, trouble, difficulty”.
303. PN *\*gʷir-/gʷer-* “to enclose, to gird” > PIE *\*g[h]er-/g[h]or-* “to gird, to enclose”; PAA *\*gʷar-/gʷər-* “to enclose, to gird”; PD *\*ker-* “to join together, to tighten, to shut, to close, to block up, to secure”; Dravidian: Kuwi *gru-* “to fence or surround”; Kui *grūpa* “to surround, to encircle”; S *gīr* “girdle”.
304. PN *\*gʷab-/gʷəb-* “to bestow upon, to give” > PIE *\*g[h]eb[h]/g[h]ob[h]-* “to give”; PAA *\*gʷab-/gʷəb-* “to bestow upon, to give”.

305. PN *\*kʷ[h]ily-/kʷ[h]ely-* “to rise, to ascend, to raise up” > PIE *\*k[h]el-/k[h]ol-/k[h]l-* “to lift, to raise, to elevate”; PAA *\*kʷ[h]al-/kʷ[h]əl-* “to lift, to raise, to ascend”; PD *\*kił-* “to rise, to ascend; to raise up, to make high”.
306. PN *\*kʷ[h]al-/kʷ[h]əl-* “to twist, to twine, to wind around, to plait” > PIE *\*k[h]elH-/k[h]olH-/k[h]lH-*, *\*k[h]loH-* (> *\*k[h]lō-*) “to twist, to turn, to plait”, *\*k[h]elk’-/k[h]olk’-/k[h]lk’-* “to twist, to wind”; PAA *\*kʷ[h]al-/kʷ[h]əl-* “to twist, to twine, to plait”.
307. PN *\*kʷ[h]ay-/kʷ[h]əy-* “to move, to move on, to move along, to go, to go away” > PIE *\*k[h]ey-/k[h]oy-/k[h]i-*, *\*k[h]y-ew-/k[h]y-ow-* “to move, to move on, to move along, to go, to go away”; PAA *\*kʷ[h]ay-/kʷ[h]əy-* “to move, to move on, to move along, to go, to go away”.
308. PN *\*k’yib-/k’yeb-* “point, prong; to point out, to stick out” > PIE *\*k’eb[h]-/k’ob[h]l-* “point, prong, piece”; PAA *\*k’yab-/k’yəb-* “finger”; PE *\*civu-* “area or part in front”.
309. PN *\*baw-ak’y-/bəw-ak’y-* “to flee” > PIE *\*b[h]ewk’-/b[h]ewk’-/b[h]uk’-* “to flee”; Afroasiatic: Semitic: Arabic *bāṣa* (< *\*bawac’-*) “to flee”.
310. PN *\*k’yaly-* “bald; head” > PIE *\*k’al-* “bald; head”; PAA *\*k’yaly-* “bald; head”; Uralic: Finnish *kalju* “bald”; PA *\*kal’y-* “blaze on the forehead”.
311. PN *\*k’yun-/k’yon-* “to bend or fold together, to crack, to split, to divide” > PIE (*\*k’en-/k’on-/k’n-*) “to bend or fold together, to crack, to split, to divide”; PK *\*k’on-* “to tie or bind together”; PAA *\*k’yany-/k’yən-* “to bend or fold together, to creak, to split, to divide”.
312. PN *\*gʷan-/gʷən-* “to hit, to strike, to slay, to kill, to wound, to harm, to injure” > PIE *\*gʷ[h]en-/gʷ[h]on-/gʷ[h]n-* “to hit, to strike, to slay, to kill, to wound, to hurt”; PAA *\*gʷan-/gʷən-* “to hit, to strike, to slay, to kill, to wound, to harm, to injure”.
313. PN *\*gʷan-/gʷən-* “to swell, to abound” > PIE *\*gʷ[h]en-/gʷ[h]on-* “to swell, to abound”; PAA *\*gʷan-/gʷən-* “to swell, to abound”; PD *\*kaṇ-* “to be heavy, stout, solid, abundant”.
314. PN *\*gʷar-/gʷər-* “to burn, to be hot; (n.) fire, warmth, heat” > PIE *\*gʷ[h]er-/gʷ[h]or-/gʷ[h]r-* “to burn, to be hot”; PAA *\*gʷar-/gʷər-* “to burn, to be hot; (n.) fire, warmth, heat”; Altaic: Manchu *guru* “to redden, to become inflamed”.
315. PN *\*kʷ[h]ul-/kʷ[h]ol-* “to end, to come to an end; to bring to an end, to complete, to finish” > Indo-European: Greek *τέλος* (< *\*kʷ[h]el-*) “the fulfillment or completion of

anything, that is, its consummation, issue, result, end”,  $\tau\epsilon\lambda\acute{\epsilon}\omega$  “to complete, to fulfill, to accomplish”; PAA  $*k^w[h]al-/ *k^w[h]\partial l-$  “to end, to come to an end; to bring to an end, to complete, to finish”; PFU  $*kul3-$  “to come to an end, to be worn (away), to pass (by)”.

316. PN  $*k^w[h]ul-/ *k^w[h]ol-$  “far off, far away, distant” > PIE  $*k^w[h]el-$  “far off, far away, distant”; PA  $*kola$  “far off, far away, distant”; PE  $*qul\partial-$  “area above”,  $*qulir$  “upper part”,  $*qulvar-$  “to rise or raise”,  $*qul\partial i-$  “to be high up”,  $*qul\partial\eta i-$  “to be or pass over”; PI  $*qulaut\partial-$  “to pass over”.
317. PN  $*k^w[h]ul-/ *k^w[h]ol-$  “to bend, to curve, to turn, to revolve; to move around” > PIE  $*k^w[h]el-/ *k^w[h]ol-/ *k^w[h]j\partial-$  “to revolve, to turn, to move around”; PAA  $*k^w[h]al-/ *k^w[h]\partial l-$  “to bend, to curve, to turn, to revolve, to move around”; PU  $*kulka-$  “to ramble about, to roam or wander about”; PD  $*kul-$  “to bend, to curve”,  $*kul-$  “to walk, to run or move about, to round and round”.
318. PN  $*k^w[h]ay-/ *k^w[h]\partial y-$  “to repay in kind, to return an equal measure” > PIE  $*k^w[h]ey-/ *k^w[h]oy-/ *k^w[h]i-$  “to repay in kind, to return like for like”; PAA  $*k^w[h]ay-/ *k^w[h]\partial y-$  “to repay in kind, to return an equal measure”.
319. PN  $*k^w[h]alp' - / *k^w[h]\partial lp' -$  “dog” > PIE  $*k^w[h]elp' -$  “whelp, puppy”; PAA  $*k^w[h]alp' -$  “dog”.
320. PN  $*k^w[h]ay-/ *k^w[h]\partial y-$  “to form, to fit, to fashion” > PIE  $*k^w[h]ey-/ *k^w[h]oy-/ *k^w[h]i-$  “to form, to fashion, to fit”; Afroasiatic: Semitic: Arabic *kayyafa* “to form, to shape, to fashion, to mold, to fit, to adjust, to adapt”; PD  $*key-$  “to do, to make”; PA  $*ki-$  “to do, to make”.
321. PN  $*k^w[h]ar-ay-/ *k^w[h]\partial r-ay-$  “to procure” > PIE  $*k^w[h]rey(H)-/ *k^w[h]roy(H)-/ *k^w[h]ri(H)-$  (>  $*k^w[h]r\bar{i}-$ ) “to buy, to purchase”; PAA  $*k^w[h]aray-/ *k^w[h]\partial ray-/ *k^w[h]ar\partial y-/ *k^w[h]\partial r\partial y-$  “to rent, to buy”.
322. PN  $*k^w[h]ar-/ *k^w[h]\partial r-$  “to scratch, to scrape, to dig” > PIE  $*k^w[h]er-/ *k^w[h]or-/ *k^w[h]r\partial-$  “to draw, to drag, to plow”; PAA  $*k^w[h]ar-/ *k^w[h]\partial r-$  “to scratch, to scrape, to dig”; PFU  $*kur3-$  (or  $*kara-$ ) “to dig, to plow”; PD  $*k\bar{a}r-$  “to dig, to plow; (n.) plowshare”.
323. PN  $*k^w[h]ur-/ *k^w[h]or-$  “body, belly” > PIE  $*k^w[h]er-/ *k^w[h]or-/ *k^w[h]r\partial-$  “body, belly”; PAA  $*k^w[h]ar-/ *k^w[h]\partial r-$  “body, belly”; PU  $*kura$  “body, form, figure”.
324. PN  $*k^w[h]i-/ *k^w[h]e-$  relative pronoun stem,  $*k^w[h]a-/ *k^w[h]\partial-$  interrogative pronoun stem > PIE  $*k^w[h]e-/ *k^w[h]o-$ ,  $*k^w[h]i-$  stem of interrogative and relative pronouns; PAA  $*k^w[h]a-/ *k^w[h]\partial-$  interrogative stem; PU  $*ki-$ ,  $*ke-$  relative pronoun stem,  $*ku-$ ,  $*ko-$



- interrogative pronoun stem; Altaic: Mongolian (relative and interrogative) *ken* “who, which”; Turkish *kim* “who?, whoever”; PE *\*ki(na)* “who”, *\*qaŋa* “when”, *\*qavciit* “how many”, *\*qaku* “when (in future)”; PY (Sireniski) *\*qayu(q)* “how”; Aleut *qana-* “which, where”.
325. PN *\*k<sup>w</sup>[h]ay* “when, as, though, also” (derivative of the preceding) > PIE *\*k<sup>w</sup>[h]oy* “when, as, though, also”; PAA *\*k<sup>w</sup>[h]ay* “when, as, though, also”.
326. PN *\*k<sup>w</sup>[h]a-/k<sup>w</sup>[h]ə-* post-positional intensifying and conjoining particle > PIE *\*-k<sup>w</sup>[h]e* intensifying and conjoining particle: “and, also, moreover, etc.”; PK *\*k[h]we* intensifying and affirming particle; PU *\*-ka/\*-kā* intensifying and conjoining particle; Altaic: Evenki *-ka/-käl/-kō* intensifying particle.
327. PN *\*k<sup>w</sup>[h]ar-/k<sup>w</sup>[h]ər-* “vessel, pot” > PIE *\*k<sup>w</sup>[h]er-/k<sup>w</sup>[h]or-* “vessel, pot”; Afroasiatic: Semitic: Akkadian *karpu*, *karpātu* “pot, vase, jug”; Ugaritic *krpn* “cup, goblet”; PD *\*kar-* “clay pot with narrow neck”, *\*kur-* “pot, jar”.
328. PN *\*k<sup>w</sup>[h]ur-/k<sup>w</sup>[h]or-* “to cut” > PIE *\*k<sup>w</sup>[h]er-/k<sup>w</sup>[h]or-/k<sup>w</sup>[h]r-* “to cut”; PAA *\*k<sup>w</sup>[h]ar-/k<sup>w</sup>[h]ər-* “to cut (into small pieces)”; PU *\*kura* “knife”; PD *\*kur-* “to cut, to cut off, to cut up, to cut away, to cut to pieces”, *\*kūr-* “section, part, division, portion, share”; PA *\*kurča* “sharp”; S *kur<sub>5</sub>* “to cut, to separate, to divide”.
329. PN *\*k<sup>w</sup>[h]ur-/k<sup>w</sup>[h]or-* “to cut short, to reduce, to decrease, to diminish, to lessen” (derivative of the preceding) > Afroasiatic: Semitic: Akkadian *karū* “to become short (said of time); to be short, shrunken (said of parts of the body); to be short (said of breath, temper)”; PD *\*kur-* “to become short, to contract, to shrink; to diminish, to dwindle; to be reduced, to decrease”; Altaic: Mongolian *qoru-* “to diminish, to decrease; to become depleted, to wane, to lessen, to die”.
330. PN *\*k<sup>w</sup>[h]al-* “fish” > PIE *\*k<sup>w</sup>[h]alo-* “large, fish”; Afroasiatic: East Cushitic: Somali *kalluun* “fish”; PU *\*kala* “fish”; PD *\*kalk-* “a kind of fish”; Altaic: Khalkha *χalim* “whale”; Mongolian *qalim* “whale”.
331. PN *\*k<sup>w</sup>[h]ur-/k<sup>w</sup>[h]or-* “to twist or twine together, to tie together, to bind, to fasten” > PIE *\*k<sup>w</sup>[h]er-/k<sup>w</sup>[h]or-/k<sup>w</sup>[h]r-* “to do, to make, to build”; PAA *\*k<sup>w</sup>[h]ar-/k<sup>w</sup>[h]ər-* “to twist or twine together, to tie together, to bind, to fasten”; PU *\*kura-* “to twist or twine together, to bind, to fasten”; S *kur<sub>4</sub>* “to tie, to bind”.
332. PN *\*k<sup>w</sup>[h]ur-/k<sup>w</sup>[h]or-* “worm, grub, maggot, insect” > PIE *\*k<sup>w</sup>[h]r-mi-, \*k<sup>w</sup>[h]r-wi-* “worm”; PD *\*kūr-* “insect”; Altaic: Mongolian *qorūqai* (< *\*koro-kai*) “worms, insects”; Turkish *kurt* “worm”; Yakut *kurdyaga* “insect”.

333. PN *\*k'wal-/\*k'wəl-* “to call (out), to cry (out), to shout” > Indo-European: Greek βλήχη (Doric βλῆχῆ) (< *\*k'wl-ā-* < *\*k'wl-eA-* [*\*k'wl-aA-*]) “a bleating, the wailing of children”; PAA *\*k'wal-/\*k'wəl-* “to call (out), to cry (out), to shout”; PD *\*kul-* “to bark”, *\*kullu* “loud noise, tumult, hubbub”.
334. PN *\*k'wiy-/\*k'wey-* “to fester; to be putrid, foul, purulent” > PIE *\*k'wey-/\*k'woy-/\*k'wi-* “to be foul, purulent”; PAA *\*k'way-/\*k'wəy-* “to fester; to be putrid, foul, purulent”; PD *\*kī* “putrid matter, pus”.
335. PN *\*k'wat'-/\*k'wət'-* “to burn, to smolder, to smoke” > PIE (*\*k'wət'-/\*k'wat'-* > [with regressive deglottalization]) *\*k'w[ʰ]et'-/\*k'w[ʰ]ot'-* “to burn, to smoke, to smolder; (n.) smoke”; PAA *\*k'wat'-/\*k'wət'-* “(n.) smoke; to smoke”; PD *\*katt-* “to kindle, to burn”.
336. PN *\*k'warb-/\*k'wərb-* “the inside, the middle, interior, inward part” > PIE *\*k'werb[ʰ]-/\*k'worb[ʰ]-, \*k'wreb[ʰ]-* “the inside, the middle, interior, inward part”; PAA *\*k'warb-/\*k'wərb-* “the inside, the middle, interior, inward part”; PD *\*karp-* “fetus, embryo, egg, germ; uterus, womb; pregnant”.
337. PN *\*k'war-/\*k'wər-* “to rest, to stay, to remain, to wait” > PIE *\*k'wer-/\*k'wor-/\*k'wǵ-* “gentle, mild, calm, at rest, still”; PAA *\*k'war-/\*k'wər-* “to rest, to stay, to remain, to settle down”.
338. PN *\*k'walb-/\*k'wəlb-* “the inside, middle, center, interior” > PIE *\*k'welb[ʰ]-/\*k'wolv[ʰ]-* “womb, pregnant”; PAA *\*k'walb-/\*k'wəlb-* “the inside, middle, center, interior”.
339. PN *\*k'wury-/\*k'wory-* “to be heavy, solid, bulky” > PIE *\*k'wer-/\*k'wor-/\*k'wǵ-* “heavy, weighty”; PAA *\*k'war-/\*k'wər-* “to be heavy, weighty”; PD *\*koṛ-* “to grow thick, solid, fat, stout”; S *gur* “hefty”, *gur*<sub>4</sub>, *gur*<sub>13</sub>, *gur*<sub>14</sub> “thick; to be or make thick”.
340. PN *\*k'wur-/\*k'wor-* “to be harsh, severe, biting, bitterly cold” > PIE (*\*k'wer-/\*k'wor-/\*k'wǵ-*: *\*k'wr-on-d[ʰ]-* “hard to bear, harsh, severe, difficult”; PAA *\*k'war-/\*k'wər-* “to be severe, fierce, biting, bitterly cold”; PD *\*koṛ-* “to be cold, to pierce (as cold)”; S *gur* “difficult, hard, severe, tough, burdensome, arduous”.
341. PN *\*k'wat'-/\*k'wət'-* “to cut” > PIE (*\*k'wət'-/\*k'wat'-* > [with regressive deglottalization]) *\*k'w[ʰ]et'-/\*k'w[ʰ]ot'-* “to whet, to sharpen”; PK (*\*k'wet'y-/\*k'wat'y-* >) *\*k'wety-/\*k'waty-* “to cut”; PAA *\*k'wat'-/\*k'wət'-* “to cut”; PD *\*katti* “knife”, *\*katk-* “to cut down (trees), to strike down (man), to slaughter”; PA *\*kad-* “to mow, to cut, to prick”.

342. PN *\*k'wud-/k'wod-* “to strike, to wound, to hurt, to slay” > PIE *\*k'wed[h]/k'wod[h]-* “to strike, to wound, to hurt, to slay”; Kartvelian: Georgian *k'vd-* “to die”; PD *\*kuṭt-* “to beat, to strike, to pound, to bruise, to thump, to cuff”.
343. PN *\*k'wut[h]/k'wot[h]-* “to say, to speak, to call” > PIE *\*k'wet[h]/k'wot[h]-* “to say, to speak, to call”; PFU *\*kutʰz-* “to call, to summon”.
344. PN *\*k'wad-/k'wad-* “to form, to fashion, to build” > PK *\*k'wed-* “to build”, *\*k'wedel-* “wall”; PAA *\*k'wad-/k'wad-* “to form, to fashion, to build”; PD *\*kuṭi* “house, hut, abode”.
345. PN *\*k'wur-/k'wor-* “to crush, to grind” > PIE *\*k'werAn-/k'wṛAn-, \*k'wreAn- [k'wraAn-]* (> *\*k'wṛān-*), *\*k'wreAwṇ- [k'wraAwṇ-]* (> *\*k'wṛāwṇ-*) “mill, millstone”; PK *\*k'werc<sub>1</sub>x-* “to break, to crush (tr.); to crumble, to break (intr.)”; PD *\*kuṛavi* “grinding pestle”, *\*kur-* “to pound, to crush”; S *gur(-gur)* “to rub off, to rub down, to grind”, *guru<sub>5</sub>* “to rub, to grate, to grind”.
346. PN *\*k'uw-/k'wow-* “bullock, ox, cow” > PIE *\*k'wōw-* “bullock, ox, cow”; PD *\*kōṭi* “young bull, young bullock, cow”; S *gu<sub>4</sub>* “ox, bull, cow”, *gud* “bull, bullock, cow”.
347. PN *\*k'wan-/k'wan-* “to suckle, to nurse; to suck” > PIE *\*k'wen-eA [k'wen-aA]* (> *\*k'wenā*) “woman, wife, female”; PAA *\*k'wan-/k'wan-* “to suckle, to nurse; to suck”; PD *\*koṇk-* “woman’s breast”.
348. PN *\*k'wuy-/k'woy-* “outer covering: skin, hide, leather, bark (of a tree), shell, crust” > PIE *\*k'weyH-/k'wiH-* (> *\*k'wī-*) “skin, hide, leather”; PFU *\*koya* “outer covering: skin, hide, leather, bark (of a tree), shell, crust”.
349. PN *\*gul-/gol-* “bend, corner, edge, valley, ravine, gully” > PIE (*\*g[h]el-/g[h]ol-/g[h]l<sub>s</sub>-*) *\*g[h]l-ent'o-s* “edge, valley”; PK *\*Gele-* “ravine”; PAA *\*gal-/gal-* “edge, slope, valley”; PFU *\*kol<sub>3</sub>* “hollow, hole; crack fissure, crevice, rift”; PD *\*kolli* “bend, corner, valley, bay”.
350. PN *\*gar-/gar-* “to cry (out), to yell, to shout” > PIE *\*g[h]er-/g[h]or-/g[h]r<sub>s</sub>-* “to cry (out), to yell, to shout”; PK *\*Gar-/Gr-* “to cry (out), to yell, to shout”.
351. PN *\*gar-/gar-* “to crush, to grate, to grind; to melt, to dissolve” > PIE *\*g[h]er-/g[h]or-/g[h]r<sub>s</sub>-* “to crush, to grate, to grind”, *\*g[h]r-en-t'-/g[h]r-on-t'-* “to grind”, *\*g[h]r-en-d[h]-/g[h]r-on-d[h]-* “to grind”; PK *\*Gerg-* “to grind (grain)”; PAA *\*gar-/gar-* “to crush, to grate, to grind”; PD *\*kar-* “to melt, to dissolve”.

352. PN *\*Gub-/ \*Gob-* “to bend, to twist” > PK *\*Gob-* “to braid, to plait”; PAA *\*gab-/ \*gəb-* “to bend, to twist”; (?) PE *\*quvə-* “to stoop (e.g., in humiliation)”.
353. PN *\*q[<sup>h</sup>]am-/ \*q[<sup>h</sup>]əm-* “to cover, to conceal” > PIE *\*k[<sup>h</sup>]em-/ \*k[<sup>h</sup>]om-* “to cover, to conceal”; PK *\*q[<sup>h</sup>]am-* “goatskin, sheepskin”; PAA *\*k[<sup>h</sup>]am-/ \*k[<sup>h</sup>]əm-* “to cover, to hide, to conceal”; PU *\*kama* “peel, skin”.
354. PN *\*q[<sup>h</sup>]al-/ \*q[<sup>h</sup>]əl-* “to strike, to split, to cut, to wound, to injure” > PIE *\*k[<sup>h</sup>]el-, \*k[<sup>h</sup>]al-* “to strike, to wound, to injure”; PK *\*q[<sup>h</sup>]leč[<sup>h</sup>]-* “to rend, to tear, to split, to break”; PAA *\*k[<sup>h</sup>]al-/ \*k[<sup>h</sup>]əl-* “to strike, to wound, to injure”.
355. PN *\*q[<sup>h</sup>]ary-/ \*q[<sup>h</sup>]əry-* “neck, throat” > Indo-European: Old English *hrace*, *hracu* “throat”; Old High German *rahho* (*\*hrahho*) “jaws, mouth (of beast); throat, cavity of mouth”; PK *\*q[<sup>h</sup>]arq[<sup>h</sup>]a-* “pharynx, throat”; PD *\*kaṛuttu* “neck, throat”.
356. PN *\*q’al-/ \*q’əl-* “neck, throat” > PIE *\*k’el-/ \*k’ol-/ \*k’l’-* “neck, throat; to swallow”; PK *\*q’eli* “neck, throat”.
357. PN *\*q’uw-/ \*q’ow-* “forehead, brow” > PK *\*q’ua-* “forehead, brow”; PAA *\*k’aw-/ \*k’əw-* “forehead, brow”; S *gú* “head, forehead”.
358. PN *\*q’aly-/ \*q’əly-* “sexual organs, genitals, private parts (either male or female)” > PIE *\*k’el-t[<sup>h</sup>]-/ \*k’l’-t[<sup>h</sup>]-* “vulva, womb”; PK *\*q’le-* “penis”; (?) Afroasiatic: Akkadian *ḫallū*, *gallū* “sexual organ” (this is usually considered to be a loan from Sumerian); Geez *kʷəlḥ* “testicle”; PFU *\*kalʷkkə* “egg, testicle”; S *gal<sub>4</sub>*, *gal<sub>4</sub>la* “vulva”, *gal<sub>4</sub>-la-tur* “vagina”, *gal<sub>4</sub>la* “sexual organs, genitals”.
359. PN *\*q’wal-/ \*q’wəl-* “to strike, to hit, to cut, to hurt, to wound, to slay, to kill” > PIE *\*k’wel-/ \*k’wol-/ \*k’w[<sup>l</sup>]-* “to strike, to hit, to cut, to hurt, to wound, to slay, to kill”; PK *\*q’wal-* “to slay, to kill”; PAA *\*k’wal-/ \*k’wəl-* “to strike, to hit, to cut, to kill, to slaughter”; PU *\*kola-* “to die”; PED *\*kol-* “to strike, to hit, to cut, to hurt, to wound, to slay, to kill”; S *gul* “to destroy”.
360. PN *\*q’wal-/ \*q’wəl-* “to throw, to hurl” (probably identical to the preceding) > PIE *\*k’wel-/ \*k’wol-/ \*k’w[<sup>l</sup>]-* “to throw, to hurl”; PAA *\*k’wal-/ \*k’wəl-* “to throw, to hurl”.
361. PN *\*q’wur-/ \*q’wor-* “to swallow; (n.) neck, throat” > PIE *\*k’wer-/ \*k’wor-/ \*k’w[<sup>l</sup>]-* “to swallow; (n.) neck, throat”; PK (*\*q’worq’- >*) *\*q’orq’-* “throat, gullet”; Afroasiatic: Semitic: Jibbālī *ḫerd* “throat”; Mehri *ḫard* “voice, throat”; PFU *\*kurkə* “neck, throat”; PD *\*kural* “neck, throat”.

362. PN *\*q'wal-/q'wəl-* “to swell, to expand” > PIE *\*k'wel-/k'wōl-/k'wǵ-* “to swell, to overflow, to burst forth”; PK *\*q'wal-* “cheese”; PD *\*kul-* “to burst forth, to sprout, to bud”; S *gu-ul* “to enlarge, to increase, to make numerous”.
363. PN *\*q'wur-/q'wor-* “edge, point, tip, peak” > PIE *\*k'wer-/k'wor-/k'wǵ-* “hill, mountain, peak”; PK *\*q'ur-* “edge”; PAA *\*k'war-/k'wər-* “highest point, top, peak, summit, hill, mountain, horn”; PD *\*kur-* “a mountain tribe; hill country, mountain country”; (?) S *kur* “mountain”.
364. PN *\*q'wur-/q'wor-* “to make a sound; (n.) sound, noise” > PIE *\*k'wer-/k'wor-/k'wǵ-* “to make a sound, to call, to call out, to praise”, *\*k'werd[h]-/k'word[h]-/k'wǵd[h]-* “to make a sound; (n.) sound, noise”; PK *\*q'ur-* “ear”, *\*q'wir-* “to cry (out), to shout”; Afroasiatic: Semitic: Arabic *ḵaraḵa* “to praise, to commend, to laud, to extol, to acclaim”; PD *\*kūr-* “to speak, to assert, to cry out, to cry aloud, to acclaim”, (?) *\*kūr-* “earring, ear”.
365. PN *\*ʕag-/ʕəg-* “young of an animal” > PIE *\*ǵheg[h]- [ǵhiag[h]-]* “with young (of animals)”; PAA *\*ʕag-/ʕəg-* “young of an animal”.
366. PN *\*ʕat[h]-/ʕət[h]-* “to move, to proceed, to advance (in years)” > PIE *\*ǵhet[h]- [ǵhiat[h]-]* “to move, to proceed, to advance (in years)”; PAA *\*ʕat[h]-/ʕət[h]-* “to move, to proceed, to advance (in years)”.
367. PN *\*ʕal-/ʕəl-* “to be high, exalted; to rise high; to ascend; on, upon, on top of, over, above, beyond” > PIE *\*ǵhel- [ǵhiāl-]/ǵhiol-* “over, above, beyond”; PAA *\*ʕal-/ʕəl-* “to be high, exalted; to rise high; to ascend; on, upon, on top of, over, above, beyond”; PU *\*ālā-* “to lift, to raise”; Altaic: Mongolian *ala* “flat-topped hill”; Manchu *ala* “a hill with a level top”, *alin* “mountain”.
368. PN *\*ʕaw-/ʕəw-* “to sleep” > PIE *\*ǵfew- [ǵhiaw-]* “to spend the night, to sleep”; Afroasiatic: Egyptian *ʕn* “to sleep, to slumber”.
369. PN *\*ʕan-añ-/ʕən-añ-* “to breathe, to respire, to live” > PIE *\*ǵhenh[h]- [ǵhianh[h]-]* “to breathe, to respire, to live”; Afroasiatic: Egyptian *nh* “to live; life, living persons”, *nhw*, *nhw* “a living being”; PE *\*anəḵ-* “to breathe out”.
370. PN *\*ʕuw-/ʕow-* “flock or herd of small animals; sheep and goats” > PIE *\*ǵhowi-* “sheep”; Afroasiatic: Egyptian *ʕt* “sheep and goats, animals, flocks, herds”; PFU *\*u-rʕe* (< *\*uwi-tʕ[e]*) “sheep”; S *uḡ* “ewe”.
371. PN *\*ʕut'-/ʕot'-* “to smell” > PIE *\*ǵhot'-* “to smell”; PAA *\*ʕat'-/ʕət'-* “to smell”.

372. PN \**ʕan-/ʕən-* “to turn, to return, to turn around, to turn back” > PIE \**ʕnen-* [\**ʕnan-*] (\**ʕnen-yo-s* [\**ʕnan-yo-s*], \**ʕnen-t[ʰ]ero-s* [\**ʕnan-t[ʰ]ero-s*]) “on the other hand, on the contrary”; PAA \**ʕan-/ʕən-* “to turn, to return, to turn around, to turn back”.
373. PN \**ʕir-/ʕer-* “to descend, to set (sun), to become dark” > PIE \**ʕfir-b[ʰ]-* [\**ʕfer-b[ʰ]-*] (later, analogical, \*(*H*)*or-b[ʰ]-*) “dark, dark-colored; darkness, night”; PAA \**ʕar-ab-/ʕər-ab-/ʕar-əb-/ʕər-əb-* “to descend, to set (sun), to become dark”; PD \**ir-* “to descend, to bend or bow down”.
374. PN \**ʕigʷ-/ʕegʷ-* “to get out or away from, to separate or part from” > PIE \**ʕfig[ʰ]-s* [\**ʕfeg[ʰ]-s*] “out of, forth from”; PAA \**ʕagʷ-/ʕəgʷ-* “to get out or away from, to leave”; PD \**ik-* “to leave behind, to go away from, to separate oneself from others”.
375. PN \**ʕub-/ʕob-* “bosom, breast” > PK \**ub-e-/a-* “bosom, breasts”; PAA \**ʕab-/ʕəb-* “breast”; S *ubur* “(wife’s) breast”.
376. PN \**ʕal-/ʕəl-* “to make a fire, to light, to ignite, to kindle, to burn” > PIE \**ʕfel-* [\**ʕhal-*] “to burn”; PAA \**ʕal-/ʕəl-* “to make a fire, to light, to ignite, to kindle, to burn”.
377. PN \**ʕab-/ʕəb-* “to be or become dry” > PK \**abed-* (“dry matter” >) “tinder, kindling”; PAA \**ʕab-/ʕəb-* “to be or become dry”.
378. PN \**ʕab-/ʕəb-* “to grasp, to seize, to take hold of, to hold tightly” > PAA \**ʕab-/ʕəb-* “to grasp, to seize, to take hold of, to hold tightly”; PD \**app-* “to embrace”; PA \**ab-* “to take, to seize, to grasp, to take or get hold of”.
379. PN \**ḥan-ag-/ḥən-ag-* “to press or squeeze together, to make narrow or constricted, to strangle; (adj.) narrow, constricted; (n.) throat” > PIE \**ḥheng[ʰ]-* [\**ḥhang[ʰ]-*] “to be narrow, to choke, to strangle; (adj.) narrow, constricted”; PAA \**ḥanag-/ḥənag-/ḥanəg-/ḥənəg-* “to be narrow, constricted; (n.) throat”; PFU \**aṇke* “painfully constricted”; PD \**aṇaṇik-* “to suffer, to be distressed, to be slain, to afflict; (n.) pain, affliction”, \**aṇik-* “palate”.
380. PN \**ḥalʷ-/ḥəlʷ-* “to grow, to be strong” > PIE \**ḥhel-* [\**ḥhal-*] “to grow, to be strong”; PAA \**ḥal-/ḥəl-* “to grow, to be strong”; PD \**aḷ-* “strength, power, ability, force, firmness”.
381. PN \**ḥas-/ḥəs-* “to burn, to be hot” > PIE \**ḥhes-* [\**ḥhas-*] “to burn, to be hot”; Afroasiatic: Egyptian *ḥsḥs* “to burn, to be hot; fire, flame”, *ḥss* “heat, flame, fire”; PFU \**ās3-* “to heat, to ignite”.

382. PN *\*h<sub>1</sub>aw-/\*h<sub>2</sub>aw-* “to sprinkle, to spray, to rain” > PIE *\*h<sub>1</sub>ew-r-* [*\*h<sub>1</sub>aw-r-*]/*\*h<sub>2</sub>u-r-*, *\*h<sub>1</sub>hw-er-/\*h<sub>2</sub>hw-or-* “to sprinkle, to spray, to rain; (n.) water, moisture”, *\*h<sub>1</sub>hw-ers-/\*h<sub>2</sub>hw-ors-* “to rain”, *\*h<sub>1</sub>ew-on(i<sup>h</sup>)-* [*\*h<sub>1</sub>aw-on(i<sup>h</sup>)-*], *\*h<sub>2</sub>ew-*n̥*(i<sup>h</sup>)-* [*\*h<sub>2</sub>aw-*n̥*(i<sup>h</sup>)-*]- “spring, well” (also used as the base of river names); Afroasiatic: Egyptian *ḥwī* “to surge up, to overflow, to rain”, *ḥwyf* “rain”; PD *\*var-* “flood, torrent, inundation”.
383. PN *\*h<sub>1</sub>ar-/\*h<sub>2</sub>ar-* “to prepare, to make ready” > PIE *\*h<sub>1</sub>her-* [*\*h<sub>1</sub>har-*]/*\*h<sub>2</sub>h<sub>2</sub>-* “to prepare, to make ready, to attend to”; Afroasiatic: Egyptian *ḥr* “to prepare, to make ready”.
384. PN *\*h<sub>1</sub>ar-ak<sup>h</sup>-/\*h<sub>2</sub>ar-ak<sup>h</sup>-* “to move, to set in motion” > PIE *\*h<sub>1</sub>herk<sup>h</sup>]/w/u-* [*\*h<sub>1</sub>hark<sup>h</sup>]/w/u-* “arrow, bow”; PAA *\*h<sub>1</sub>ar-ak<sup>h</sup>-/\*h<sub>2</sub>ar-ak<sup>h</sup>-/\*h<sub>3</sub>ar-ək<sup>h</sup>-/\*h<sub>4</sub>ar-ək<sup>h</sup>-* “to move, to set in motion”.
385. PN *\*h<sub>1</sub>am-/\*h<sub>2</sub>am-* “to be sharp, sour, acid” > PIE *\*h<sub>1</sub>hem-* [*\*h<sub>1</sub>ham-*]/*\*h<sub>2</sub>hom-* “sharp, sour, acid”; PAA *\*h<sub>1</sub>am-/\*h<sub>2</sub>am-* “to be sharp, sour, acid”.
386. PN *\*h<sub>1</sub>an-/\*h<sub>2</sub>an-* “to show favor; to be gracious, affectionate, tender” > PIE *\*h<sub>1</sub>hen-s-* [*\*h<sub>1</sub>han-s-*] “to be gracious, to show favor”; PAA *\*h<sub>1</sub>an-/\*h<sub>2</sub>an-* “to show favor, to be gracious”.
387. PN *\*h<sub>1</sub>ar-/\*h<sub>2</sub>ar-* “to be superior, to be higher in status or rank, to be above or over” > PIE *\*h<sub>1</sub>her-yo-* [*\*h<sub>1</sub>har-yo-*] “a superior, a person higher in status or rank”; PAA *\*h<sub>1</sub>ar-/\*h<sub>2</sub>ar-* “to be superior, to be higher in status or rank, to be above or over”.
388. PN *\*h<sub>1</sub>ag-/\*h<sub>2</sub>ag-* “to cover over, to hide, to conceal, to obscure, to overshadow; (n.) mist, darkness, cloudy weather; (adj.) misty, dark, cloudy” > PIE (*\*h<sub>1</sub>heg<sup>h</sup>]/-* [*\*h<sub>1</sub>hag<sup>h</sup>]/-*] “to cover, to hide, to conceal, to obscure”: *\*h<sub>1</sub>heg<sup>h</sup>]/-lu-* [*\*h<sub>1</sub>hag<sup>h</sup>]/-lu-*] “mist, darkness, cloudy weather”; PAA *\*h<sub>1</sub>ag-/\*h<sub>2</sub>ag-* “to cover over, to hide, to conceal, to obscure, to overshadow”.
389. PN *\*h<sub>1</sub>ar-/\*h<sub>2</sub>ar-* “then, therefore, with, and” > PIE *\*h<sub>1</sub>her-* [*\*h<sub>1</sub>har-*]/*\*h<sub>2</sub>h<sub>2</sub>-* “then, therefore, and”; Afroasiatic: Egyptian *ḥr* “for, because, with, and, therefore, moreover”.
390. PN *\*h<sub>1</sub>uy-at’-/\*h<sub>2</sub>oy-at’-* “to swell, to be fat” > PIE *\*h<sub>1</sub>hoyt’-* “to swell”; PAA *\*h<sub>1</sub>ayāt’-/\*h<sub>2</sub>ayāt’-/\*h<sub>3</sub>ayāt’-* “to swell, to be fat”.
391. PN *\*h<sub>1</sub>ap<sup>h</sup>-/\*h<sub>2</sub>ap<sup>h</sup>-* “to gather or collect (with the hands or arms)” > PIE *\*h<sub>1</sub>hep<sup>h</sup>]/-* [*\*h<sub>1</sub>hap<sup>h</sup>]/-* [*\*h<sub>2</sub>hop<sup>h</sup>]/-*] “to gather, to collect; to gather wealth”; PAA *\*h<sub>1</sub>ap<sup>h</sup>-/\*h<sub>2</sub>ap<sup>h</sup>-* “to gather or collect (with the hands or arms)”.

392. PN *\*h̥ap[h̥]/-h̥ap[h̥]-* “to go, to move along, to flow” > PIE *\*h̥hep[h̥]-* [*\*h̥hap[h̥]-*] “water, stream”; Afroasiatic: Egyptian *h̥pi* “to go, to travel, to march, to sail (of a boat), to fly away (of birds), to flow (of water)”, *h̥pi* “flowing”.
393. PN *\*haw-/h̥aw-* “to shine” > PIE *\*h̥hew-s-* [*\*h̥haw-s-*], *\*h̥hw-es-/h̥hu-s-* “to shine”, *\*h̥hew-k’-* [*\*h̥haw-k’-*] “to shine”; PAA *\*haw-/h̥aw-* “to shine”.
394. PN *\*haw-/h̥aw-* “to weave, to braid, to plait” > PIE *\*h̥hew-* [*\*h̥haw-*] “to plait, to weave”, *\*h̥hw-ih̥h-* [*\*h̥han-eḥh-*] (> *\*Hwē-*) “to weave, to braid, to plait”, *\*h̥hw-eb[h̥]/-h̥hw-ob[h̥]/-h̥hu-b[h̥]-* “to weave”, *\*h̥hw-ey-/h̥hw-oy-/h̥hw-i-* “to weave, to braid, to plait”; PAA *\*haw-/h̥aw-* “to weave, to braid, to plait”.
395. PN *\*han-/h̥an-* “to bend, to curve, to twist” > PIE *\*h̥hen-k[h̥]-* [*\*h̥han-k[h̥]-*] “to bend, to curve”, *\*h̥hen-k’-* [*\*h̥han-k’-*] “to bend, to curve”; PAA *\*han-/h̥an-* “to bend, to curve, to twist”.
396. PN *\*hak’-/h̥ak’-* “field” > PIE *\*h̥hek’-ro-* [*\*h̥hak’-ro-*] “field”; PAA *\*hak’-/h̥ak’-* “field”.
397. PN *\*hak’-/h̥ak’-* “to direct, to guide, to command” > PIE *\*h̥hek’-* [*\*h̥hak’-*] “to direct, to guide, to command”; PAA *\*hak’-/h̥ak’-* “to direct, to guide, to command”.
398. PN *\*huk[h̥]/-h̥ok[h̥]-* “to cut, to whet, to sharpen, to scrape” > PIE *\*h̥huk[h̥]-* [*\*h̥hok[h̥]-*] (> *\*ok[h̥]-*), (reduced-grade) *\*h̥hək[h̥]-* (> *\*ak[h̥]-*) “sharp, pointed; edge, point”; PAA *\*hak[h̥]/-h̥ak[h̥]-* “to cut, to whet, to sharpen, to scrape”; PA *\*okī* “tip, top; highest; arrow”.
399. PN *\*haw-/h̥aw-* “to swell, to increase” > PIE *\*h̥hew-k’-* [*\*h̥haw-k’-/h̥hu-k’-*], *\*h̥hw-ek’(s)-/h̥hw-ok’(s)-* “to grow, to increase”; PK *\*xwaw-* “great number, many”.
400. PN *\*har-/h̥ar-* “to scratch, to scrape” (> “to plow”) > PIE *\*h̥her-* [*\*h̥har-*] “to plow”; PAA *\*har-/h̥ar-* “to scratch, to scrape, to plow”; PD *\*ar-* “a plow”; S *har(-har)* “to scratch, to scrape”.
401. PN *\*hak’-/h̥ak’-* “to cut into” > PIE *\*h̥hek’-w(e)siH* [*\*h̥hak’-w(e)siH*] “ax”; PAA *\*hak’-/h̥ak’-* “to cut into”.
402. PN *\*har-ak’-/h̥ar-ak’-* “to tear, to rend, to break apart” > PIE *\*h̥herk’-* [*\*h̥hark’-/h̥hork’-/h̥hṛk’-*] “to tear, to rend, to break apart”; PAA *\*harak’-/h̥arak’-/h̥arək’-/h̥arək’-* “to tear, to rend, to break apart”.



403. PN *\*h̥ar-ak'ʷ-/\*h̥ər-ak'ʷ-* “to glisten” > PIE *\*h̥herk'-* [*\*h̥hark'-*]/*\*h̥hṛk'-* “to glisten”; PAA *\*h̥arak'ʷ-/\*h̥ərak'ʷ-/\*h̥arək'ʷ-/\*h̥ərək'ʷ-* “to glisten”.
404. PN *\*h̥al-/\*h̥əl-* “to wear down, to wear out, to weaken; to be worn out, worn down, weakened” > PIE *\*h̥hel-* [*\*h̥hal-*] “to wear down, to grind”; PAA *\*h̥al-/\*h̥əl-* “to wear down, to wear out, to weaken; to be worn out, worn down, weakened”; PD *\*al-* “to be worn out; to become weary, to be tired; to suffer, to be in distress”, *\*al-i-* “to dissolve, to decay”, *\*alk-* “to become small, to wane, to shrink, to lessen”; PA *\*eli-* “to wear out”; S *ha-lam* “to destroy, to demolish, to wreck, to ruin; (n.) ruin, destruction”.
405. PN *\*h̥at'-/\*h̥ət'-* “to scratch, to scrape, to cut into, to hollow out” > PIE *\*h̥het'-* [*\*h̥hat'-*] “to cut into, to etch”; Kartvelian: Svan *xṭ'ūr-* “to cut into pieces, to slice, to carve”; PAA *\*h̥at'-/\*h̥ət'-* “to scratch, to scrape, to cut into, to hollow out”.
406. PN *\*h̥ur-/\*h̥or-* “falcon, hawk” > PIE *\*h̥hor-/\*h̥hṛ-* “eagle”; Afroasiatic: Egyptian *hṛ*, *hṛw* “the god Horus (one of the two brother hawk-gods)”; PD *\*eruway* “eagle, kite”; S *hu-rí-in* “eagle”.
407. PN *\*h̥in-ak[h̥]-/\*h̥en-ak[h̥]-* “to reach, to come to, to arrive at” > PIE *\*h̥hink[h̥]-/\*h̥hṅk[h̥]-* > *\*h̥henk[h̥]-/\*h̥hṅk[h̥]-* “to reach, to come to, to arrive at; to offer, to present”; PAA *\*h̥anak[h̥]-/\*h̥ənak[h̥]-/\*h̥anək[h̥]-/\*h̥ənək[h̥]-* “to reach, to come to, to arrive at, to gain; to offer, to present”; PED *\*inc-* “to receive”.
408. PN *\*mih̥-/\*meh̥-* “to measure, to mark off” > PIE *\*mih̥h-* [*\*meh̥h-*] (> *\*mē-*) “to measure, to mark off”; Afroasiatic: Egyptian *mḥ* “cubit, forearm”.
409. PN *\*h̥iw-/\*h̥ew-* “to lack, to stand in need, to be in want” > PIE *\*h̥hiw-* [*\*h̥hew-*]/*\*h̥hu-*, *\*h̥hw-eA-* [*\*h̥hw-aA-*] (> *\*Hw-ā-*) “to lack, to stand in need, to be in want”; PAA *\*haw-/\*h̥əw-* “to lack, to stand in need, to be in want”.
410. PN *\*h̥al-/\*h̥əl-* “to be separated or apart from; to set apart, to remove, to empty” > PK *\*xole-* (“separated from, apart, by oneself”) > “alone, sole (adj.); only, merely, solely (adv.)”; PAA *\*h̥al-/\*h̥əl-* “to be separated or apart from; to set apart, to remove, to empty”; PE *\*ali* “far away”, *\*aliya-* “to be lonely”.
411. PN *\*h̥al-/\*h̥əl-* “to divide, to allot, to apportion, to enumerate, to count” (probably identical to the preceding) > PAA *\*h̥al-/\*h̥əl-* “to divide, to allot, to apportion, to enumerate, to count”; Dravidian: Tamil *alaku* “number, calculation, cowries (as signs of number in reckoning)”; (?) Kodagu *alu* “cowry”; PD *\*al-* “to measure, to limit; (n.) measure, extent,

size, number”; S *hal* “to separate, to divide; to deal out, to distribute”, *ha-la* “portion, share”, *hal(-hal)* “to apportion, to allot, to deal out, to distribute”.

412. PN *\*hul-/\*hol-* “to destroy, to lay waste, to cause to perish” > PIE *\*h<sub>1</sub>hul-* > *\*h<sub>1</sub>hol-* “to smite, to destroy”; PD *\*ul-* “to become diminished, to be devoid of, to die, to terminate, to perish, to be ruined, to ruin; (n.) end, ruin, death”; S *hul* “to destroy”.
413. PN *\*hag-/həḡ-* “to lift, to raise, to rise, to go upward, to ascend; that which is most prominent, visible, or noticeable; on top of, over, above” > PAA *\*han-* “over, above, on (top of)”; PU *\*agta* “horn”; PD *\*aḡ-* “to rise, to move upwards; (n.) upper part, height; superiority, excellence, greatness”, *\*āḡ-* “excellence, superiority”; PA *\*ōḡe* “that which is most prominent, visible, or noticeable”; (?) PE *\*aḡə-* “to be big”.
414. PN *\*hag-t[h]-/\*həḡ-t[h]-* “the most prominent or foremost (person or thing), front, front part” (extended form of the preceding) > PIE *\*h<sub>1</sub>hent[h]-s* [*\*h<sub>1</sub>hant[h]-s*] “front, front part”, *\*h<sub>1</sub>hent[h]-i* [*\*h<sub>1</sub>hant[h]-i*] “in front of, before”; Afroasiatic: Egyptian *hnt* “face, front part; in front of”, *hnt* “to ascend, to rise (the Nile)”, (adv.) *hntw* “before, earlier”, *hnt*, *hnty* “nose, face”, *hnty* “who or which is in front of (of place), who is at the head of, foremost, pre-eminent in, principal (of degree), protruding (of shape)”.
415. PN *\*hasʷ-/həsʷ-* “a tree and its fruit” > PIE *\*h<sub>1</sub>hes-* [*\*h<sub>1</sub>has-*]/*\*h<sub>1</sub>hos-* originally “a tree and its fruit” (as in Hittite), but later specialized in the post-Anatolian Indo-European daughter languages; Uralic (loans from Indo-European): Mordvin (Erza) *ukso* “ash, elm”; Cheremis / Mari *oško* “poplar”; S *hašhur* “apple, apple-tree”, *hašhur-a-ab-ba* “a kind of apple-tree”, *hašhur-ar-man-nu*, *hašhur-kur-ra* “apricot, apricot-tree”, *hašhur-babbar* “a fruit-tree and its fruit”, *hašhur-kur-ra* “pear-tree”, *hašhur-niš-DA*, *hašhur-ḡiš-DA* “pear”, *hašhur-kur-ra* “quince”.
416. PN *\*haw-* “a relative on the mother’s side” > PIE *\*h<sub>1</sub>hewh<sub>1</sub>ho-s* [*\*h<sub>1</sub>hawh<sub>1</sub>ho-s*] “maternal grandfather, maternal uncle”; PD *\*awway* “mother, mother’s sister or female parallel cousin, grandmother, old woman, elder brother’s wife”.
417. PN *\*ʔak[h](k[h])/\*ʔək[h](k[h])-* “older relative (male or female)” > PIE *\*ʔak[h]k[h]-* “mother”; PAA *\*ʔak[h]k[h]-* “(grand)mother”; PD *\*akka* “elder sister”; PA *\*eke* “older female relative”; PE *\*a(a)kar* “older female relative”.
418. PN *\*ʔat’/\*ʔət’-* “to chew, to bite, to eat, to consume” > PIE *\*ʔet’/\*ʔot’-* “to eat”; Afroasiatic: PS *\*ʔat’-am-* “to bite into”; Altaic: Mongolian *ide-* “to eat, to feed on, to gnaw, to eat up, to devour, to consume”; Buriat *ed’e-* “to eat”; Dagur *idḡ-* “to eat”.

419. PN *\*ʔar-/ʔər-* “earth” > PIE *\*ʔer-* “earth, ground”; PAA *\*ʔar-/ʔər-* “earth, land”; PD *\*ere* “clay, soil”.
420. PN *\*ʔak[h]/ʔək[h]-* “to eat” > Indo-European: Sanskrit *asnáti* “to eat”; PAA *\*ʔak[h]/ʔək[h]-* “to eat”.
421. PN *\*ʔas-/ʔəs-* “to gather, to collect” > PIE *\*ʔes-/ʔos-* “harvest-time”; PAA *\*ʔas-/ʔəs-* “to gather, to collect”.
422. PN *\*maʔ-/məʔ-* “to increase (in numbers), to be many, to be abundant” > PIE *\*meʔ-/moʔ-* (> *\*mē-/mō-*) “more, abundant, considerable”; PAA *\*maʔ-/məʔ-* “to increase (in numbers), to be many, to be abundant”; S *me* “abundant, plenty”.
423. PN *\*ʔan-/ʔən-* “to load up and go, to send off” > PIE *\*ʔen-os-/ʔon-os-* “load, burden”; PD *\*an-* “to load up and go, to send off”.
424. PN *\*ʔanʷ-/ʔənʷ-* “to draw near to, to approach, to come (close to)” > Indo-European: Greek *ἔνος* “year”; PAA *\*ʔan-/ʔən-* “to draw near to, to approach, to come (close to), to arrive”; PD *\*aṇ-* “to approach, to come near to, to come close to”.
425. PN *\*ʔanʷ-/ʔənʷ-* “to, towards, over, for, against, upon, on” (derivative of the preceding) > PIE *\*ʔan-* “to, towards, over, for, against, upon, on”; Afroasiatic: Semitic: Akkadian *ana* “to towards, over, for, against, upon, on”; S *en* “as far as, (up) to, with, together with, in addition to, besides, including”, *en(-na)*, *en-ṣā* “as far as, (up) to”, *en-na* “to, towards, near, in addition to, besides, moreover”.
426. PN *\*ʔim-/ʔem-* “to seize, to grasp, to take” > PIE *\*ʔem-/ʔm-* “to take, to obtain”; PAA *\*ʔam-/ʔəm-* “to seize, to grasp, to take”.
427. PN *\*ʔaw-ar-/ʔəw-ar-* “man, male, male animal” > PIE *\*ʔwers-/ʔwrs-* “male”; PK *\*werʒ₁-* “ram”; Afroasiatic: PEC *\*ʔawr-* “male animal”; PFU *\*urə* “male, man”.
428. PN *\*ʔar-ag-/ʔər-ag-* “to climb on, to mount; to rise, to be lifted up; to lift up, to raise” > PIE *\*ʔerg[h]/ʔorg[h]/ʔḡg[h]-* “to climb on, to mount; to rise, to become puffed up”, *\*ʔorg[h]i-* “testicle” (< “puffed up, swollen”); PAA *\*ʔarag-/ʔərag-/ʔarəg-/ʔərəg-* “to climb on, to mount; to rise, to ascend”; PD *\*ark-* “to climb, to mount an animal, to rise, to get puffed up”; Altaic: Mongolian *ergü-, örgü-* “to lift up, to raise”; Buriat (Alar dialect) *ürgü-*, (Khor dialect) *wurge-* “to lift”.

429. PN *\*ʔar-/ʔər-* “associated or related person or thing; associate, companion, friend; kinsman; associated, related” > PIE *\*ʔer-/ʔor-/ʔr-* “associated, related”; PAA *\*ʔar-/ʔər-* “associated or related person or thing; associate, companion, friend; kinsman”.
430. PN *\*ʔat[ʰ]/(t[ʰ])-/ʔət[ʰ]/(t[ʰ])-* “father” > PIE *\*ʔat[ʰ]/(t[ʰ])-* “father”; Afroasiatic: Egyptian *ʔt* “father”; PED *\*atta* “father”; PA *\*etiké(y)* “older male relative”; PE *\*ata* “father”.
431. PN *\*ʔul-/ʔol-* demonstrative pronoun stem > PIE *\*ʔol-* demonstrative pronoun stem; PAA *\*ʔal-/ʔəl-* demonstrative pronoun stem.
432. PN *\*ʔin-/ʔen-* “in, into, to, towards, besides, moreover” > PIE *\*ʔen-* “in, into, among, on”; PAA *\*ʔən-* “in, on, from, by”.
433. PN *\*ʔa-/ʔə-* 1st singular pronoun stem > PIE *\*ʔe-* (+ *\*k’-/g[ʰ]/k[ʰ]-*) 1st singular personal pronoun stem; PAA *\*ʔa-/ʔə-* 1st singular pronoun stem; S *a-aA* “I”.
434. PN *\*ʔasʷ-/ʔəʷ-* “to put, to place, to set; to sit, to be seated” > PIE *\*ʔēs-/ʔōs-* “to put, to place, to set; to sit, to be seated”; PAA *\*ʔasʷ-/ʔəʷ-* “to put, to place, to set; to sit, to be seated”; PU *\*asʷa-* “to place, to put, to set”; S *aš-te* “seat, stool, throne”, *aš-ti* “seat, throne”, *eš-de*, *eš-ki* “throne”.
435. PN *\*ʔap[ʰ]/ʔəp[ʰ]-* “and, also, and also” > PIE *\*ʔep[ʰ]i/\*ʔop[ʰ]i* “and, also, and also, besides, moreover”; PAA *\*ʔap[ʰ]/ʔəp[ʰ]-* “and, also, and also”.
436. PN *\*ʔadʷ-/ʔədʷ-* “to be pointed, to be sharp” > PIE *\*ʔed[ʰ]/ʔod[ʰ]-* “pointed, sharp”; PAA *\*ʔadʷ-/ʔədʷ-* “to be pointed, to be sharp”; PD *\*ac-* “thorn”.
437. PN *\*ʔar-/ʔər-* used as the base for the designation of various animals > PIE *\*ʔer-/ʔor-/ʔr-* used as the base for the designation of various domestic horned animals; PK *\*arc[ʰ]k[ʰ]w-* used as the base for the designation of various animals; PAA *\*ʔar-/ʔər-* used as the base for the designation of various animals; PD *\*er-* “bull, bullock, ox, buffalo”.
438. PN *\*ʔap[ʰ]/ʔəp[ʰ]-* “to burn, to be hot, to cook, to boil, to bake” > PIE *\*ʔep[ʰ]/ʔop[ʰ]-* “to cook”; PAA *\*ʔaf-/ʔəf-* (?) “to burn, to be hot”.
439. PN *\*ʔam(m)-/ʔəm(m)-* “mother” > PIE *\*ʔam(m)-* “mother”; PAA *\*ʔam(m)-/ʔəm(m)-* “mother”; PU *\*emä* “mother”; PED *\*amma* “mother”; Altaic: Classical Mongolian *eme* “woman, wife”; S *ama* “mother”; PY *\*əma* “grandmother”.

440. PN \*ʔab- “father” > PIE \*ʔab[h]- “father, forefather, man”; PAA \*ʔab- “father, forefather, ancestor”; PD \*ap(p)- “father”; PA \*aba-ka “paternal uncle” (< \*aba “father”); S a-ba, ab, ab-ba “father”; PE \*ap(p)a “grandfather”.
441. PN \*ʔab-/\*ʔəb- “to be strong, mighty” > PIE \*ʔab[h]-ro- “strong, powerful, mighty”; PAA \*ʔab-/\*ʔəb- “to be strong, mighty”; PA \*abga “strength, power”.
442. PN \*ʔay-/\*ʔəy- “to come, to go” > PIE \*ʔey-/\*ʔoy-/\*ʔi- “to go”, \*ʔy-eh- [\*ʔy-ah-] “to go, to proceed”; PAA \*ʔay-/\*ʔəy- “to come, to go”; PD \*iy- “to move, to stir, to go”, \*eyt- “to approach, to reach, to obtain, to arrive at”; PA \*ī- “to come”; S è “to go out, to come out, to leave, to bring out”, è “to get away from, to flee, to run away”, e<sub>II</sub> “to ride, to travel”.
443. PN \*ʔi/\*ʔe (adverbial particle) “to, toward, near to, hither, here” > PIE \*ʔe/\*ʔo “hither, near to, toward”, \*-i deictic particle meaning “here and now” added to verbs to form so-called “primary” endings; PAA \*ʔa “to, toward, in, on”; S e “hither, here”.
444. PN \*ʔi/\*ʔe proximate demonstrative particle (probably identical to the preceding adverbial particle), \*ʔa/\*ʔə distant demonstrative particle > PIE \*ʔe-/\*ʔo-, \*ʔey-/\*ʔoy-/\*ʔi- (< \*ʔe-/\*ʔo- + y/i-) demonstrative stem; PK \*i- demonstrative stem, \*e- demonstrative stem; PU \*e- demonstrative particle; PD \*ǎ distant demonstrative particle, \*ĩ proximate demonstrative particle; PA \*i-, \*e- proximate demonstrative particle.
445. PN \*ʔay(y)- “mother, female relative” > PIE \*ʔay-t[h]- “mother”; PAA \*ʔay(y)- “mother”; PD \*ǎ(y)- “mother”; PI \*ayak “maternal aunt”.
446. PN \*ʔam-/\*ʔəm- “time, moment” > Indo-European: Old Irish *amm* “time, moment, point of time”; PAA \*ʔam-/\*ʔəm- “time, now”.
447. PN \*ʔak[h]-/\*ʔək[h]- “to cut, to strike, to wound, to hurt, to injure, to cause grief; to be hurt, wounded, injured” > PIE \*ʔek[h]-/\*ʔok[h]- “to be wounded, hurt, injured”; PAA \*ʔak[h]-/\*ʔək[h]- “to cut, to strike, to wound, to hurt, to injure, to cause grief; to be hurt, wounded, injured”; PD \*ak- “to break, to cut to pieces”; S AK “to strike”.
448. PN \*ʔat[h]r-/\*ʔət[h]r- “at once, early, quickly” > PIE (lengthened-grade) \*ʔēt[h]r- “at once, quickly, early”; PK (\*at[h]re > [with voicing]) \*adre “at once, quickly, early”; PA (\*ētre > [with metathesis]) \*ēte “early”.
449. PN \*ʔal-/\*ʔəl- element of negation > Indo-European: Hittite *li-e* element used with the present indicative to express a negative command; PAA \*ʔal-/\*ʔəl- element of negation; Uralic: Finnish *älä* (2nd sg.)/äl- or *elä/el-* imperative of the negative auxiliary verb; Yurak

Samoyed / Nenets *ele, el* “not”; PD *\*al-* “to be not so-and-so”; PA *\*üli-* negative element preceding verbs; S *li* negative particle: “not, un-”.

450. PN *\*ʔil-/ʔel-* “to shine, to radiate, to flash, to glitter, to glisten” > PK *\*el-* “lightning”; Afroasiatic: Semitic: Arabic *ʾalaka* “to shine, to radiate, to flash, to glitter, to glisten”; PD *\*el-* “to shine, to glisten, to glitter; (n.) luster, splendor, light; sun”.
451. PN *\*ʔar-/ʔər-* “to cut (off, apart), to sever, to separate, to part asunder” > PIE *\*ʔer-d[h]-* /*\*ʔor-d[h]-* /*\*ʔr-d[h]-* “to split, to divide, to separate”; PD *\*ar-* “to cut off, to chop off, to sever”.
452. PN *\*ʔil-/ʔel-* “hoofed, cud-chewing animal” > PIE *\*ʔel-/ʔol-* “hoofed, cud-chewing animal”; Afroasiatic: PSC *\*ʔaale-* “hoofed, cud-chewing animal”; PD *\*il-* “stag, antelope, deer” (Tamil *iralai* [< *\*ilar-*] “stag, a kind of deer”; Telugu *iri* “stag”, *irri* [< *\*ilri*] “antelope”, *lēṭi, lēḍi* [< *\*ilaṭi*] “antelope”; Malto *ilari* “the mouse deer”; Altaic: Mongolian *ili* “a young deer, fawn”; Khalkha *il* “a young deer, fawn”.
453. PN *\*ʔal-/ʔəl-* “to purify, to cleanse” (> “to sift, to clean grain”) > PAA *\*ʔal-/ʔəl-* “to purify, to cleanse; to sift, to clean grain”; PD *\*al-* “to wash, to rinse”; Altaic: Mongolian *elkeg* “sieve, sifter, strainer, bolter”, *elkegde-* “to sift, to bolt”; Turkish *elek* “sieve”, *elmek* “to sift, to sieve”.
454. PN *\*ʔanʷ-* “mother, aunt” > PIE *\*ʔano-s* “mother”; Afroasiatic: PSC *\*ʔaṇ-* “father’s sister”; PU *\*anʷa* “mother, aunt”; PD *\*aṇṇ-* “a woman, mother”; Altaic: Turkish *ana* “mother”; PE *\*a(a)na* “mother, grandmother”.
455. PN *\*har-/hər-* “to release, to set free; to become free” > PIE *\*her-* [*\*har-*] /*\*hor-* /*\*h₂r-* “to release, to set free”; PAA *\*har-/hər-* “to release, to set free; to become free”.
456. PN *\*hap[h]-/həp[h]-* “to turn, to turn away, to turn back” > PIE *\*hep[h]o* [*\*hap[h]o*] “(turned) away, back”; PAA *\*hap[h]-/həp[h]-* “to turn, to turn away, to turn back”.
457. PN *\*hal-/həl-* “to light up, to beam forth, to shine, to brighten up, to radiate” > PIE *\*hel-b[h]o-* [*\*hal-b[h]o-*] “white; cloud, whiteness”; PAA *\*hal-/həl-* “to light up, to beam forth, to shine, to brighten up, to radiate”; PD *\*al-* “to shine, to glitter; (n.) beauty, pleasure”; S *al-è* “to light up, to shine, to brighten up, to radiate, to beam forth”.
458. PN *\*haw-/həw-* “to long for, to desire” > PIE *\*hew-* [*\*haw-*] “to long for, to desire”; PAA *\*haw-/həw-* “to long for, to desire”; PD *\*āw-* “to desire”.

459. PN *\*hak'/\*hək'* – “to inflict pain, to wrong, to offend, to oppress” > PIE *\*hek'-* [*\*hak'-*] “to inflict pain, to wrong, to offend, to injure”; Afroasiatic: Egyptian *hq* “to oppress, to inflict pain, to diminish”, *hqs* “to defraud, to steal”.
460. PN *\*haw-/\*həw-* “to put on, to get dressed, to wear” > PIE *\*hew-* [*\*haw-*], *\*hw-es-/\*hw-os-* “to put on, to wear”; PAA *\*haw-/\*həw-* “to put on, to get dressed, to wear”.
461. PN *\*hag-/\*həg-* “to burn, to be on fire, to be aflame, to be ablaze; to shine brightly” > Indo-European: Sanskrit *ahi-h* “the sun”, *āhā* “day”; PAA *\*hag-/\*həg-* “to burn, to be on fire, to be aflame, to be ablaze; to shine brightly”.
462. PN *\*ham-/\*həm-* “black” > PIE *\*hem-s-* [*\*ham-s-*], *\*hm-es-* “blackbird”, (?) *\*hmg-* “black, dark”; PAA *\*ham-/\*həm-* “black”.
463. PN *\*hay* exclamation of surprise, astonishment, grief, or misfortune > PIE *\*hey* [*\*hay*] exclamation of surprise, astonishment, grief, or misfortune; PAA *\*hay* exclamation of surprise, astonishment, grief, or misfortune; Uralic: Finnish *ai* “oh!, oh dear!”; Hungarian *ajaj* “oh dear!”; PD *\*ayya* exclamation of pain, surprise, grief, pity, or lamentation; Altaic: Mongolian *ai*, *aia* (*aya*) interjection expressing pity, sympathy, worry, or fear: “oh!, ah!”; Manchu *ai* “hey!”, *aya* interjection of praise or surprise.
464. PN *\*hal-/\*həl-* “else, otherwise” > PIE *\*hel-* [*\*hal-*] “else, otherwise; other”; PAA *\*hal-/\*həl-* “else, otherwise”; PE *\*aləx* “other (of pair)”.
465. PN *\*haŋ-/\*həŋ-* “to split apart, to open (tr.); to gape, to open (the mouth), to yawn; (n.) opening: yawn, gape, mouth; hole; crack, crevice” > PIE *\*hen-t[h]ro-* [*\*han-t[h]ro-*] (“hole, opening” >) “cave, cavern”; PFU *\*aŋa-* “to open”, PU *\*aŋa* “mouth, opening”; PD *\*aŋk-* “to open the mouth, to gape, to yawn”, *\*aŋ-* “neck, jaw, chin, throat, mouth”; PA *\*aŋ* “crack, cleft”, *\*aŋ-a-* “to open”; PE *\*aŋva-* “to be open”, *\*aŋvar-* “to open”.
466. PN *\*həy-aw-/\*həy-aw-* “to live” > *\*hheyw-* [*\*həy-aw-*]/*\*həyow-*, *\*hheyu-* [*\*həy-aw-*]/*\*həyoy-* “alive; life, lifetime”; PAA *\*həyaw-/\*həyaw-/\*həyəw-/\*həyəw-* “to live”; PA (*\*ayu* > *\*äyü* >) *\*öyü* “alive, life”.
467. PN *\*ʔay-*, *\*ʔya-* interrogative and relative pronoun stem > PIE *\*ʔyo-* relative pronoun stem; Kartvelian: Svan (interrogative) *jär* “who?”, (relative) *jerwāj* “who”, (indefinite) *jer* “somebody, something”, *jerē* “someone, somebody”, *jerwāle* “anybody”; PAA *\*ʔay(y)-* interrogative pronoun stem; PFU *\*yo-* “who, which”; PD *\*yā-* interrogative stem; PA *\*yā-* interrogative stem: “who?, which?, what?”; (?) S (animate interrogative) *a-ba* “who?”, (inanimate interrogative) *a-na* “what?” (if *a-* < *\*ya-*).

468. PN \*ʔya- interrogative verb stem: “to do what?, to act in what manner?” (derivative of the preceding) > PIE \*ʔyo- originally an interrogative verb stem meaning “to do what?, to act in what manner?”, later simply “to do, to make, to perform”; PD \*iya- “to do, to effect, to cause, to induce, to cause to act; to be possible, to be proper”; Altaic: CM \*yaya-, \*yeyi- (< \*yayi-), \*yeki- interrogative verb stem: “to do what?, to act in what manner?”.
469. PN \*yiw-/yew- “grain” > PIE \*yewo- “grain”; PFU (\*yewä >) \*yüwä “grain”.
470. PN \*ʔiya 1st person personal pronoun stem (postnominal possessive/preverbal agentive) > PAA \*ʔəya 1st person personal pronoun stem; PED \*i “I”, PD \*i-ən > \*iən [ʔən] > (with vowel lengthening in accordance with Zvelebil’s Law) \*yān-/y- “I”.
471. PN \*yam- “water, sea” > PAA \*yam- “sea”; Uralic: Proto-Samoyed \*yama “sea”; (?) PD \*am- “water”.
472. PN \*yaʔ-/yəʔ- “to tie, to bind, to gird” > PIE \*yoʔs- (> \*yōs-) “to gird”; Afroasiatic: Egyptian *īm* “to tie, to bind”; PU \*yāyā “belt, band, strap, girdle”; PD \*yā- “to bind; (n.) binding, bond”.
473. PN \*yan-/yən- “to say, to speak” > PAA \*yan-/yən- “to say”; PD \*yan- “to say”.
474. PN \*wad-/wəd- “to take, to lead, to carry, to bring” > PIE \*wed[h]/-/\*wod[h]- “to lead, to bring, to carry”; PAA \*wad-/wəd- “to take, to lead, to carry, to bring”; PFU \*wetä- “to take, to guide, to lead, to carry”.
475. PN \*wa-/wə- 1st person personal pronoun stem > PIE \*we-/wo-, \*wey- 1st person dual and plural personal pronoun stem; PK \*-we- in (inclusive) \*č[h]-we-[na] “we”, \*č[h]-we-n- “our”; PAA \*wa-/wə- 1st person personal pronoun stem.
476. PN \*ʔaw-, \*ʔwa/\*ʔwə “or” > PIE \*ʔwe “or”; PAA \*ʔaw- “or”.
477. PN \*wa/\*wə sentence particle: “and, also, but; like, as” > PIE \*we, \*u sentence particle: “and, also, but; like, as”; Kartvelian: Georgian -ve enclitic particle; PAA \*wa sentence particle.
478. PN \*wad-/wəd- “to cut, to strike, to slay” > PIE \*wed[h]/-/\*wod[h]- “to cut, to strike, to slay”; PAA \*wad-/wəd- “to cut, to strike, to slay”; PD \*vet̪- “to cut (as with sword or ax), to cut off, to engrave, to cut into”.
479. PN \*way exclamation: “woe!” > PIE \*way exclamation: “woe!”; PAA \*way exclamation: “woe!”; S ù-a, ù “woe!”.



480. PN *\*war-/wər-* “to look at, to watch out for, to observe, to care for” > PIE *\*wer-/wor-* “to look, to watch out for, to observe, to care for”; Afroasiatic: Egyptian *wṛḥ* “to guard, to protect”, *wṛš* “to watch, to observe, to be awake”; Proto-Ugric *\*warə-* “to watch over, to look after, to tend, to attend to, to keep, to guard, to wait for, to wait on”.
481. PN *\*waf-/wəf-* “to call, to cry out, to sound” > PIE *\*weǵh- [wafǵh-]/woǵh-* (> *\*wā-/wō-*) “to call, to call out”; PAA *\*waf-/wəf-* “to call, to cry out, to sound”; PD *\*vāñk-* “to call, to cry out, to sound”.
482. PN *\*wir-/wer-* “to stretch, to extend, to expand” > PIE *\*wer-/ur-* “to stretch, to extend; wide, broad, extended, great, large”; PK *\*wṛc[h]e-l-* “wide, broad”; PAA *\*war-/wər-* “to stretch, to extend, to spread out”.
483. PN *\*wat’-/wət’-* “to moisten, to wet; water” > PIE *\*wet’-/wot’-/ut’-* “to moisten, to wet; water”; PU *\*wetä* “water”; PD *\*ōt-* “moisture, dampness, wetness”.
484. PN *\*wus-/wos-* “to trade, to deal” > PIE *\*wes-/wos-* “to trade, to deal”; PFU *\*wosa* “trade, commerce”.
485. PN *\*wal-/wəl-* “to pull (out)” > PIE *\*wel-/wol-/wǵ-* “to draw, to pull, to tear out”; PD *\*val-* “to draw, to pull, to pull up”.
486. PN *\*wal-/wəly-* “to turn, to roll, to revolve” > PIE *\*wel-/wol-/wǵ-* “to turn, to roll, to revolve”; PAA *\*wal-/wəl-* “to revolve”; PD *\*val-* “to circle around, to surround; (n.) ring, bracelet, circle”.
487. PN *\*wal-* “to be or become strong” > PIE *\*wal-* “to be strong”; PD *\*val-* “to be strong, hard; (adj.) strong, hard, forceful; (n.) strength, power, firmness”.
488. PN *\*wal-/wəl-* “to cry out, to call out, to shout” > PIE *\*wal-* “to shout”; Afroasiatic: Semitic: Arabic (reduplicated) *walwala* “to cry ‘woe’, to lament, to wail, to howl, to break into loud wails”; PD *\*val-* “to say, to tell, to call”.
489. PN *\*wury-/wory-* “to scratch, to incise, to dig up” (> “to plow”) > PIE *\*wor-/wṛ-* “to plow; (n.) furrow, ditch”; PD (*\*wūr-* >) *\*ūr-* “to plow”; S *uru<sub>4</sub>, ur<sub>11</sub>-(ru)* “to plow”.
490. PN *\*wum-/wom-* “to eject, to spit (out), to emit” > PIE *\*wem-/wom-* “to vomit, to spit up”; PD (*\*wum-* >) *\*um-* “to spit, to spit out, to emit”.
491. PN *\*wur-/wor-* “to burn” > PIE *\*wer-/wor-* “to burn”; PAA *\*war-/wər-* “to burn”; PD (*\*wur-* >) *\*ur-* “to burn”; S *ur<sub>4</sub>-ur<sub>4</sub>* “to burn up, to consume, to flicker, to flame, to glitter, to glisten”.

492. PN *\*war-/wər-* “to say, to speak, to tell, to point out, to make known” > PIE *\*wer-* “to say, to speak, to tell”; PAA *\*war-/wər-* “to say, to speak, to tell, to point out, to make known”; PD *\*verr-* “to say, to speak, to tell”.
493. PN *\*wir-/wer-* “poplar” > PIE *\*wer-n-* “alder, poplar”; PK *\*werxw-* “aspen”; PD *\*viricu* “large sebesten”.
494. PN *\*walʲ-/wəlʲ-* “to blaze, to shine, to be bright” > PIE *\*wel-* “to see, to look, to view”; PFU *\*walʲkə* “shining, white, light (of color)”, *\*walʲə* “to shine, to gleam”; PD *\*ol-* “to shine, to glitter; (n.) light, splendor, brightness”, *\*vel-* “to dawn, to become white, to shine, to be clean or bright; (adj.) white, pure, shining, bright”, *\*āl-* “to shine; (n.) luster, splendor, brightness”.
495. PN *\*wal-/wəl-* “to set fire to, to burn, to heat up, to warm” > PIE *\*wel-/wol-/wǵ-* “to heat, to warm, to boil”; Afroasiatic: Semitic: Arabic *waliʿa* “to catch fire, to burn; to kindle, to light, to set fire (to)”; PD *\*ol-* “to set fire to, to char, to scorch”.
496. PN *\*watʼy-/wətʼy-* “the belly, stomach, bowels; womb; the interior or inside of anything” > PIE *\*wetʼer-o-/utʼer-o-* “the belly, stomach, bowels; womb; the interior or inside of anything”; PFU *\*watʼa* “the belly, stomach, bowels; womb; the interior or inside of anything”; PD *\*vac-* “the belly, stomach, bowels; womb; the interior or inside of anything”.
497. PN *\*wāḥ-/wəḥ-* “to strike, to stab, to wound” > PIE *\*weh₂h-* [*\*wāh₂h-*]/*\*woh₂h-* (> *\*wā-/wō-*) “to strike, to wound”; Afroasiatic: Egyptian *whj* “to hew or cut stone, to reap (crops), to pluck (flowers, plants)”, *whs* “to cut off (hair), to kill (rebels), to quell (tumult)”, *whʿ* “to wound, to stab with a knife, to sting (of a scorpion)”; Altaic: Manchu *wa-* “to kill, to slay”.
498. PN *\*waṇ-/wəṇ-* “to bend” > PIE *\*wen-d[h]-/won-d[h]-/wṇ-g[h]-* “to bend, to twist, to turn”, *\*wen-k[h]-/won-k[h]-/wṇ-k[h]-* “to bend, to twist, to turn”, *\*wen-kʼ-/won-kʼ-/wṇ-kʼ-* “to curve, to bend”, *\*wen-g[h]-/won-g[h]-/wṇ-g[h]-* “to turn, to go crookedly”; PAA *\*wan-/wəṇ-* “to bend, to twist; to be bent, twisted, crooked”; PFP *\*waṇka* “bent or curved object: hook, handle, knob, lever, elbow, etc.”; PD *\*vaṇki* “bent or curved object: hook, handle, curved ornament”, *\*vaṇaṇk-* “to bend”, *\*vāṇk-* “to bend, to bow, to stoop, to become crooked”.
499. PN *\*wakʼ-/wəkʼ-* “to rouse, to stir up, to excite; (n.) energy, strength, vigor, power, might” > PIE *\*wekʼ-/wokʼ-* “to rouse, to stir up, to excite, to awaken”; PFU *\*wāke* “strength, power”.
500. PN *\*war-/wər-* “to raise, to elevate; to grow, to increase; (n.) uppermost, highest, or topmost part” > PIE *\*wer-d[h]-/wor-d[h]-/wǵ-d[h]-* “to raise, to elevate, to grow, to

increase”, \**wer-s-/wor-s-/wr-s-* “uppermost, highest, or topmost part”; Afroasiatic: Egyptian *wr* “great, important, much, many, eldest”, *wrr* “to be great, to make great, to increase, to grow high”, *wr* “greatness, great one, chief”; PFU \**wārā* “(wooded) hill or mountain”; PD \**varay* “mountain, peak, steep slope”.

501. PN \**wasʷ-/wəʷsʷ-* “to crush, to grind, to pound, to wear out; to be or become worn out, tired, weary, fatigued, exhausted” > PIE \**wes-* “to crush, to grind, to pound, to wear out; to wither, to fade, to rot, to waste away”; Afroasiatic: Egyptian *wšš* “to crush, to pound”, *wšm* “to slay, to crush, to chop up, to split, to pound together”; PFP \**wāsʷā-* “to be or become tired, weary, fatigued, exhausted”; PD \**vēc-* “to grow tired, fatigued, weary”.
502. PN \**witʰ[ʰ]/wetʰ[ʰ]-* “to strike, to hit, to beat” > Afroasiatic: PS \**watʰ[ʰ]-ay-* “to quarrel or fight with someone, to speak against”; PFU \**weðʒ-* “to strike, to kill, to slay, to slaughter”; PD \**vīkk-* “to strike”.
503. PN \**watʰ[ʰ]/wətʰ[ʰ]-* “to pass (of time); to grow old, to age, to wither; (n.) year, age; (adj.) old” > PIE \**wetʰ[ʰ]-* “to pass (of time); to grow old, to age; (n.) year, age; (adj.) old”; PAA \**watʰ[ʰ]/wətʰ[ʰ]-* “to pass (of time), to continue (for a long time)”; PD \**vatañk-* “to wither, to fade”; PA \**öte* “old (of people)”.
504. PN \**wal-/wəl-* “to flow, to wet, to moisten” > PIE \**wel-kʰ[ʰ]/wol-kʰ[ʰ]-*, *wel-kʰ-/wol-kʰ-*, \**wel-gʰ[ʰ]/wol-gʰ[ʰ]-* “to wet, to moisten”; Afroasiatic: Semitic: Arabic *waliḥa-t* “well-watered, rich in vegetation”; PD \**ol-* “to flow”, \**vāl-* “to drip, to drizzle”.
505. PN \**wal-/wəl-* (?) “to well up, to flow forth, to flood” (probably identical to the preceding) > PIE \**wel-/wol-/wǵ-* “surge, wave”; PD \**veḷlam* “flood, inundation, wave”.
506. PN \**wal-/wəl-* “to crush, to grind, to wear out; to be worn out, weak; to fade, to wither, to waste away” > PIE \**wel-/wol-/wǵ-* “to crush, to grind, to wear out; to be worn out, weak; to fade, to wither, to waste away”; PD \**val-* “to be tired; to be thin; to be painful”, \**olk-* “to grow weak or faint; to become reduced, slender, emaciated, thin”; PA \**öl-* “to be weak from hunger, to wither, to fade, to starve to death”.
507. PN \**wal-/wəl-* “to strike, to wound, to destroy” (probably identical to the preceding) > PIE \**wel-/wol-/wǵ-* “to strike, to wound”; PD \**vel-* “to conquer, to overcome, to destroy”.
508. PN \**wuy-/woy-* “to make an effort, to act with energy; (n.) strength, power” > PIE \**wey(H)-/woy(H)-/wi(H)-* “to make an effort, to act with energy; (n.) strength, power”, \**wey-kʰ[ʰ]/woy-kʰ[ʰ]/wi-kʰ[ʰ]-* “to make an effort, to act with energy; (n.) strength, power”; PFU \**woye-* “to be able, to have the power or capability”; Altaic: PT \**u(y)-* “to be able, to have power or capability”.

509. PN *\*wuy-/wōy-* “to swim, to float” > PAA *\*way-/wāy-* “to swim, to float, to sail”; PU *\*woya-* “to swim”; PA *\*oyimu-* “to swim (across)”.
510. PN *\*wuy-ik<sup>[h]</sup>-/wōy-ik<sup>[h]</sup>-* “to arrange or put in order; (adj.) straight, right, correct, true” > PIE *\*weyk<sup>[h]</sup>-/wōyk<sup>[h]</sup>-/wīk<sup>[h]</sup>-* “to arrange or put in order, to make equal or similar; that which is true, reasonable, equal, or similar”; PFU *\*woyke* “straight, right, correct, true”; PD *\*oyk-* “order, straightness, fitness”.
511. PN *\*wun-d-/wōn-d-* “(young, fine, or soft) hair” > PIE *\*wend<sup>[h]</sup>-/wōnd<sup>[h]</sup>-* “(young, fine, or soft) hair, beard”; PU *\*wunta* “(young, fine, or soft) hair, beard”; PD *\*oṇtu* “stubble”.
512. PN *\*wut<sup>[h]</sup>-/wōt<sup>[h]</sup>-* “to take hold of, to seize, to grasp, to collect, to take away” > Afroasiatic: Semitic: Geez *wataga, wattaga* “to flee, to escape, to recoil, to hide (by fleeing), to rob”; PFU *\*wotta-* “to take hold of, to gather, to collect”; PD *\*ot-* “to bring, to take, to fetch”.
513. PN *\*mañ-/māñ-* “to increase, to swell, to exceed, to surpass, to be great” > PAA *\*mañ-/māñ-* “to increase, to swell”; PD *\*mā-* “big, great”, *\*māñ-* “to become excellent, glorious; to be full, abundant, great; (n.) greatness, excellence, splendor, glory”, *\*mēl-ti* “chief, head; greatness, excellence”; S *mah* “to be or make great, magnificent; to be much, many”.
514. PN *\*mag-/māg-* “to be of great influence, importance, or power; to be eminent, exalted, highly esteemed, glorious, illustrious” > PIE *\*meg<sup>[h]</sup>-/mog<sup>[h]</sup>-* “to be of great influence, importance, or power; to be eminent, exalted, highly esteemed, glorious, illustrious”; Kartvelian: Georgian *mayali* “high, great”; PAA *\*mag-/māg-* “to be of great influence, importance, or power; to be eminent, exalted, highly esteemed, glorious, illustrious”.
515. PN *\*mig-/meg-* “to give” > PIE *\*meg<sup>[h]</sup>-* “to give”; PAA *\*mag-/māg-* “to deliver, to offer” (not a loan from Sanskrit); PU *\*miyā-* “to give, to sell”.
516. PN *\*miʔ-/mēʔ-* “to reap, to harvest” > PIE *\*meʔ-* (> *\*mē-*) “to mow, to reap”; Afroasiatic: Egyptian *m3* “to reap, to harvest”, *m3s* “to cut”.
517. PN *\*mat<sup>[h]</sup>-/māt<sup>[h]</sup>-* “middle; in the middle of, with, among” > PIE *\*met<sup>[h]</sup>-* “middle; in the middle of, with, among”; PAA *\*mat<sup>[h]</sup>-/māt<sup>[h]</sup>-* “middle; in the middle of, with”.
518. PN *\*mul-/mol-* “to rub, to crush, to grind” > PIE *\*mel-/mol-/m̥l-* “to rub, to crush, to grind”; PAA *\*mal-/māl-* “to rub, to crush, to grind”; PU *\*mola-* “to grind, to crush, to break, to smash”; PD *\*mel-* “to be or become thin, weak, lean; (adj.) soft, tender, thin”.

519. PN *\*man-/mən-* “to divide, to apportion” (> “to count, to reckon” > “to consider, to think” > “to recount” > “to speak, to say”) > PIE *\*men-/mon-/m̥n-* “to reckon, to consider, to think”; PAA *\*man-/mən-* “to divide, to apportion; to count, to reckon, to enumerate”; PU *\*mana-* (*\*mona-*) “to consider, to conjecture, to recount, to say, to speak”; PD (*\*many-* >) *\*maṇ-* “to talk, to speak”.
520. PN *\*man-/mən-* “to stay, to remain, to abide, to dwell; to be firm, steadfast, established, enduring” > PIE *\*men-/mon-* “to stay, to remain, to abide, to dwell; to be firm, steadfast, established, enduring”; PAA *\*man-/mən-* “to stay, to remain, to abide, to dwell; to be firm, steadfast, established, enduring”; PD *\*man-* “to stay, remain, to abide; (n.) house, dwelling, abode”; PA *\*mana-* “to stand watch”.
521. PN *\*maw-/məw-* “water, liquid, fluid” > PIE *\*mew-/mow-/mu-* “water, liquid, fluid; to be wet, damp”; PAA *\*maw-/məw-* “water, liquid, fluid”.
522. PN *\*mar-/mər-* “young man, young animal” > PIE *\*mer-yo-* “(young) man”; PAA *\*mar-/mər-* “(young) man”; PD *\*maṛi* “young of animals; husband, man, son”.
523. PN *\*ma(?) / mə(?)* negative/prohibitive particle > PIE *\*me?* (> *\*mē*) prohibitive particle; Kartvelian: Svan (particle of modal negation) *mād* “no, not”, *mām(a)* “not”, *māma* “no”; PAA *\*ma(?)* negative/prohibitive particle.
524. PN *\*mi-/me-* interrogative pronoun stem, *\*ma-/mə-* relative pronoun stem > PIE *\*me-/mo-* interrogative and relative pronoun stem; PK *\*mi-n-* interrogative pronoun, *\*ma-* “what”; PAA *\*ma-/mə-* relative and interrogative pronoun stem; PU *\*mi* interrogative and relative pronoun stem; Altaic: Turkish *mī, mı, mu, mü* interrogative particle; S *me-na-ām* “when?”, *me-a* “where?”, *me-šə* “where to?”. PE enclitic particle *\*mi* “what about?”.
525. PN *\*mir-/mer-* “to stab, to pierce, to cause pain; to suffer pain, to be weakened, to be afflicted” > PIE *\*mer-/mor-/m̥r-* “to die”; PAA *\*mar-/mər-* “to suffer pain, to be weakened, to be afflicted; to be or become sick, to fall ill; to die”; PD *\*miṛ-* “to pierce, to stab, to cause pain; to suffer pain, to be afflicted”.
526. PN *\*mur-/mor-* “to crush, to break, to destroy” > PIE *\*mer-/mor-/m̥r-* “to crush, to destroy; to be or become crushed, to disintegrate”; PU *\*mura-* “to break, to shatter”; PD *\*muṛ-* “to crush, to break, to cut”, *\*mur-* “to break, to crush, to destroy”; S *mur* “to crush, to grind”.
527. PN *\*mat’-/mət’-* “to stretch, to expand, to lengthen, to draw out, to measure out” > PIE *\*met’-/mot’-* “to measure, to measure out, to estimate”; Kartvelian: Georgian *mat’-* “to augment, to increase”; PAA *\*mat’-/mət’-* “to stretch, to expand, to lengthen, to draw out, to measure out”; PA *\*mede-* “to know, to perceive, to understand”.

528. PN *\*mal-/māl-* “to fill, to be or become full, to increase” > PIE *\*mel-/mol-/m̥l-* “much, many, very much”; PAA *\*mal-/māl-* “to fill, to be full”; PD *\*mal-* “to increase, to abound, to be plentiful, to be full; (n.) abundance, wealth, strength, greatness”.
529. PN *\*mal-/māl-* “good, pleasant” > PIE *\*mel-/mol-* “good, pleasant”; Afroasiatic: Semitic: Arabic *malīḥ* “good”; Ugaritic *mlḥ* “good, pleasant”.
530. PN *\*mar-/mār-* “any body of water: lake, sea” > PIE *\*mar-i-* “a body of water: lake, sea”; Afroasiatic: Egyptian *mr* “any body of water: lake, pool, cistern, flood, reservoir, stream, basin, canal”; PA *\*mōr* “river, water”.
531. PN *\*mur-/mor-* “to twist, to turn, to bend” > PIE *\*mer-/mor-* “to twist, to turn”; PAA *\*mar-/mār-* “to twist, to turn”; PD *\*mur-* “to bend, to be bent, to turn round, to twist; (n.) rope, cord; bend, curve”, *\*mur-* “to twist, to twine, to tighten”; PA *\*muru-* “to turn, to twist, to bend”.
532. PN *\*mur-/mor-* “mulberry, blackberry” > PIE *\*mor-* “blackberry, mulberry”; Afroasiatic: Egyptian *mr* “mulberry-tree”; PU *\*mura* “*Rubus chamaemorus*”.
533. PN *\*mun-/mon-* “to protrude; to stand out; to jut out; to be first, foremost, in front of; (n.) topmost or most protuberant part, highest or farthest point” > PIE *\*men-/mon-/m̥n-* “to protrude, to stand out, to jut out; (n.) highest or farthest point, topmost or most protuberant part”; Afroasiatic: Egyptian *mn*, *mny* “mountain, stone, hill”, *mnw* “monument”; PD *\*mun-* “point, end, extremity; before, in front, further; first”.
534. PN *\*mun-atʿ-/mon-atʿ-* “to suckle; (n.) breast, udder” > PIE *\*mentʼ-/montʼ-/m̥ntʼ-* “to suckle; (n.) suckling, young animal; breast, udder”; Afroasiatic: Egyptian *mnd* “breast”; PD *\*moñci* “breasts”.
535. PN *\*mal-/māl-* “honey” > PIE *\*mel-i-t[h]-* “honey”; PAA *\*mal-/māl-* “honey”.
536. PN *\*mat[h]-/māt[h]-* “to set in motion, to arouse, to excite, to impel; to be luxuriant or fruitful, to be fertile; to be energetic, vigorous, strong; (n.) man, male” > Indo-European: Old Icelandic *maðr* “man, human being”; Ligurian (in Romansch) *mat* “boy”; PAA *\*mat[h]-/māt[h]-* “to be energetic, vigorous, strong, fertile”, *\*māt[h]-* “man, male”; PD *\*mat-* “to be luxuriant or fruitful, to be fertile, to grow fat; to be in must (n.) strength, abundance, excess”.
537. PN *\*matʼ-/mātʼ-* “to be or become wet, moist” > PIE *\*matʼ-* “to be wet, moist”; PAA *\*matʼ-/mātʼ-* “to be or become wet, moist”.
538. PN *\*mar-/mār-* “to smear, to anoint, to rub (with grease, fat, ointment)” > PIE *\*(s)mer-/\*(s)mor-/\*(s)m̥-* “to smear, to anoint, to rub (with oil, fat, or ointment)”; PAA *\*mar-/mār-*

- “to smear, to anoint, to rub (with grease, fat, ointment)”; PD *\*mer-* “to rub (oil, etc. on oneself or on another), to smear”; S *mar* “to daub, to anoint”.
539. PN *\*mar-/mər-* “to soil, to stain; (n.) spot, stain, dirt; (adj.) dark, dirty, soiled” (possibly related to the preceding) > PIE *\*mer-/mor-/m̥-* “to soil, to stain; (n.) spot, stain, dirt; (adj.) dark, dirty, soiled”; PD *\*mar-* “stain, blot, spot”.
540. PN *\*mi-/me-* 1st person personal pronoun stem > PIE *\*me-/mo-* 1st person personal pronoun stem; PK *\*me-*, *\*men-* 1st person personal pronoun stem; PAA *\*ma-/mə-* 1st person personal pronoun stem; PU *\*me* 1st person sg. personal pronoun stem: “I, me”, *\*me* 1st pl. personal pronoun stem; PA (nom. sg.) (*\*mi* >) *\*bi* “I”, (oblique stem) *\*min-*; S (Emesal) *ma(-e)*, *me-a*, *me-e* “I”, (1st pl. possessive suffix) *-me* “our”; Eskimo-Aleut: West Greenlandic 1st sg. relative possessive suffix *-ma*.
541. PN *\*manʷ-/mənʷ-* “to lust after, to desire passionately, to copulate, to have sexual intercourse, to beget” > (?) Indo-European: Irish *mian* “desire”; Welsh *mwyn* “enjoyment, value; gentle, kind, dear”, *mwynhau* “to enjoy”; PAA *\*man-/mən-* “to lust after, to desire passionately, to copulate, to have sexual intercourse, to beget”; PD *\*map-* “to be united with, to love, to copulate with, to wed; (n.) copulation, union, marriage”.
542. PN *\*manʷ-/mənʷ-* “progenitor, begetter, man, male” (derivative of the preceding) > PIE *\*man(u)-* “man, begetter, progenitor”; Afroasiatic: PHEC *\*man(n)-* “man, person”; PEC (with fossilized feminine suffix) *\*man-t-/min-t-* “woman”; PFU *\*manʷɪʒ* “man, male”; PD *\*mañc-* “man, husband”.
543. PN *\*madw-/mədw-* “honey, mead” > PIE *\*med[h]w/u-* “honey, mead”; PFU *\*mete* “honey”; PD *\*maṭṭu* “honey, toddy”.
544. PN *\*musʷ-ik’-/mosʷ-ik’-* “to immerse in water, to dip or plunge in water” > PIE *\*mesk’-/mosk’-* “to immerse in water, to dip or plunge in water”; PU *\*musʷka-* (*\*mosʷka-*) “to wash”; PD (*\*muy-/muc->*) *\*mī(y)-/muc-* “to wash, to bathe”.
545. PN *\*mag-* “young; young person, child” > PIE *\*mag[h]-* “young”, *\*mag[h]u-* “young person, child”; PD *\*maka* “young person, child”.
546. PN *\*mik’-/mek’-* “to exceed, to surpass, to be in excess, to grow, to increase, to swell, to expand; (adj.) big, great, much” > PIE *\*mek’-* “big, great, much”; PD *\*mik-* “to exceed, to surpass, to be in excess, to grow, to increase, to swell, to expand; (adj.) great, much, superior; (n.) abundance, fullness, excess, surplus”.
547. PN *\*mur-/mor-* “to make a noise, to murmur” > PIE *\*mur-*, *\*mor-*, (redup.) *\*murmur-*, *\*mormor-* “to murmur, to rustle, to grumble”; PAA *\*mar-/mər-* “to murmur, to make a noise”; PFU *\*mura* :crying, shouting, singing; to cry, to shout, to sing”; PD *\*mur-* “to make a

- sound, to cry, to sing, to rumble”, \**mur-* “to murmur, to grumble”, (\**mury-* >) \**muṛ-* “to make a sound, to make aloud noise”; S *mur* “cry, scream, shouting, yelling, voice”.
548. PN \**mak’-/māk’-* “to handle, to work with the hands” > PIE \**mak’-* “to work with the hands, to form, to shape, to prepare, to make”; PAA \**mak’-/māk’-* “to handle, to work with the hands”; PU \**mekä-* “to do, to make, to fabricate; (n.) work, handicraft”.
549. PN \**mun-/mon-* “egg, testicle” > Indo-European: Common Slavic (\**mon-d[h]-* >) \**mōdo* “testicle”; PU \**muna* “egg, testicle”; PD \**muṇṭay* “egg, testicle”.
550. PN \**mal-/māl-* “hill, mountain” > PIE \**mel-/mol-* “hill, mountain”; PD \**malay* “hill, mountain”.
551. PN \**muk’-/mok’-* “to strain, to make great efforts” > Indo-European: Greek μόγος (< \**mok’-*) “toil, trouble”, μογέω “to toil, to suffer”; PD \**mukk-* “to strain, to make great efforts”.
552. PN \**mal-/māl-* “to draw (out), to pull (out), to suck (out)”, derivative (in Indo-European, Uralic, and Dravidian) \**mal-iq’-/māl-iq’-* “to draw (out), to suck (out); to give suck, to suckle, to nurse” > PIE \**melk’-/molk’-/mĵk’-* “to draw (milk), to milk, to suck; to give suck, to suckle”; PAA \**mal-/māl-* “to draw (out), to suck out”; PFU \**mälke* “breast”; PD \**melk-* “to chew”; PE \**məluṛ-* “to suck (breast)”.
553. PN \**mag-/mæg-* “earth, land” > PIE \**mag[h]-* “earth, land”; PU \**maṣa* “earth, land”.
554. PN \**mar-/mār-* “tree, wood” > Afroasiatic: Egyptian *mrw* “a kind of wood”; PFU \**mora* “tree, wood”; PD \**maram* “tree, wood”.
555. PN \**ma-/mā-*, \**mu-/mo-* demonstrative stem > Indo-European \**mo-* demonstrative stem (preserved vestigially in Celtic); PK \**ma-* demonstrative stem: “this, he”; PFU \**mu* “other, another”; Altaic: CT (nom. sg.) (\**mū/\*mō* >) \**bū/\*bō* “this”, (oblique stem) \**mu-n-*; Mongolian *mön* deictic word serving as a demonstrative pronoun, adjective, adverb, and copula.
556. PN \**nat’-/nət’-* “to moisten, to wet” > PIE \**net’-/not’-* “to moisten, to wet”; PAA \**nat’-/nət’-* “to moisten, to wet”.
557. PN \**nik[h]-/nek[h]-* “to strike, to hit” > PIE \**nek[h]-/nok[h]-* “to slay, to smite”; PAA \**nak[h]-/nək[h]-* “to strike, to hit”; PU \**nikkä-* “to push”; PD \**nek-* “to suffer, to be distressed”.



558. PN *\*nir-/ner-* “to be strong, manly, virile” > PIE *\*ner-* “to be strong, manly, virile; (n.) man, hero”; Afroasiatic: Egyptian *nr* “to be strong, mighty”, *n<sub>rw</sub>* “power, strength, victory, valor, mighty one”; S *ner* “prince”.
559. PN *\*natʼy-/nətʼy-* “to turn, to twist together” > PIE *\*netʼ-/notʼ-* “to turn, to twist together, to tie, to bid”; Afroasiatic: Egyptian *nḏ* “string, thread”.
560. PN *\*nap[h]/nəp[h]-* “to breathe, to blow” > PIE (*\*np[h]-* > [with metathesis]) *\*p[h]n-ew-/p[h]n-ow-/p[h]n-u-, \*p[h]n-es-/p[h]n-os-, \*p[h]n-ek[h]-* “to breathe, to blow”; PAA *\*naf-/nəf-* “to breathe, to blow”.
561. PN *\*naw-/nəw-* “time” > PIE *\*nu* “now”; Afroasiatic: Egyptian *nw* “time, hour”.
562. PN *\*na/\*nə, \*ni/\*ne, \*nu/\*no* negative/prohibitive particle > PIE *\*ne, \*n̥-, \*ney* negative particle; PK *\*nu* prohibitive particle; Afroasiatic: Egyptian *n, nn, n̄, ny, nw* “not”; PU *\*ne* negative particle; S *na* “not”, *na-* prohibitive prefix, *nu* “not”, *nu-* negative prefix.
563. PN *\*nañ-/nəñ-* “to tremble, to shake; to fear, to be afraid” > PIE *\*neñh-* [*\*nañh-*] (> *\*nā-*) “to fear”; PAA *\*nañ-/nəñ-* “to tremble, to shake; to fear, to be afraid”.
564. PN *\*na-/nə-* 1st person personal pronoun stem > PIE *\*ne-/no-/n̥s-* used in the oblique cases of the personal pronoun of the first person dual and plural; Kartvelian: Svan *näj* “we”; PAA *\*na-/nə-* 1st person personal pronoun stem; PD *\*nām-, \*nam-* “we” (inclusive).
565. PN *\*nab-/nəb-* “to burst forth, to gush forth” > PIE *\*neb[h]/nob[h]-* “to burst out, to burst forth”; PAA *\*nab-/nəb-* “to burst forth, to gush forth”; PE *\*navəγ-* “to break”.
566. PN *\*nag-/nəg-* “to strike, to split, to pierce” > PIE *\*neg[h]/nog[h]-* “to strike, to split, to pierce”; PAA *\*nag-/nəg-* “to strike, to split, to pierce”.
567. PN *\*nusʼ-/nosʼ-* “to wear down, to reduce in size, to diminish, to weaken” > Indo-European: Greek νοσέω “to be ill, to ail”, νόσος “sickness, disease, malady”; PAA *\*nasʼ-/nosʼ-* “to wear down, to reduce in size, to diminish, to weaken”; PD (*\*noy-/noc-* >) *\*nō(y)-/noc-* “to be weakened, debilitated, sick; to ache; to suffer, to be in pain”.
568. PN *\*naɫ-/nəɫ-* “to come, to go, to arrive, to journey, to travel, to sail” > PIE (*\*neɫfi-* [*\*naɫfi-*]/*\*noɫfi-* “to sail, to set sail”:) *\*neɫfi-u-s* [*\*naɫfi-u-s*] “ship”; PAA *\*naɫ-/nəɫ-* “to come, to go, to arrive, to journey, to travel, to sail”.

569. PN *\*ʔin-im-/\*ʔin-em-* “to say, to speak, to name; (n.) name” > PIE *\*(H)nēm̥g*, *\*(H)nōm̥g/\*(H)nōm(e)n-* “name”; PU *\*nimā* “name”; S *inim* “word”, *inim-du<sub>11</sub>* “to speak”, *inim-bal* “to say, to speak, to tell; (n.) speech, utterance”, *inim-e* “to say a word, to utter”.
570. PN *\*na-/\*nə-, \*ni-/\*ne-, \*nu-/\*no-* demonstrative stem > PIE *\*ne-/\*no-* (derivative form *\*ʔe-no-/\*ʔo-no-* < *\*ʔe-/\*ʔo-* + *\*no-*) demonstrative stem; PAA *\*na-/\*nə-* demonstrative stem; PU *\*na/\*nā* (*\*ni/\*ne* ?), *\*no* demonstrative stem; S *ne-en*, *ne(-e)* “this”.
571. PN *\*naw-/\*nəw-* “to sound, to call, to praise” > PIE *\*new-/\*now-/\*nu-* “to sound, to shout, to exult, to praise, to commend”; Afroasiatic: Semitic: Arabic *nawwaha* “to praise, to laud, to extol, to acclaim, to speak highly of, to commend”; PD *\*nav-* “to say, to tell, to utter, to sound loudly, to sing; (n.) voice, song”.
572. PN *\*nat’-* “woman, female relative” > Afroasiatic: PSC *\*nat’a* “woman”; PU *\*nata* “sister-in-law, younger brother of the husband or the wife”; PD *\*nāt-* “husband’s sister, sister-in-law”.
573. PN *\*nyip[h]-/\*nep[h]-* “offspring” > PIE *\*nep[h]-(ō)t[h]-* “descendant, offspring”; PAA *\*naf-/\*nəf-* “offspring”; PU *\*nyeplā* “reindeer calf”.
574. PN *\*nyam-/\*nyəm-* “to press, to squeeze” > PFU *\*nyamə-* “to press (together), to squeeze”; PD *\*ñam-* “to press, to squeeze, to crush, to pinch”.
575. PN *\*nyaf-ar-/\*nyəf-ar-* “to appear, to arise, to sprout, to come into being; to grow (up), to mature” > PAA *\*naf-ar-/\*nəf-ar-* “to appear, to arise, to sprout, to come into being; to grow (up), to mature”; PU *\*nyārā* “sprout, sprig, twig”; PD *\*ñār-* “to appear, to arise, to sprout, to come into being; to grow (up), to mature”; PA *\*nyār-* “new, fresh; new-born; spring, summer”.
576. PN (?) *\*nyim-/\*nyem-* “to bend; (adj.) flexible, pliant, yielding, soft” > PIE *\*nem-/\*nom-/\*n̥m̥-* “to bend”; PU (?) *\*ny[u]ma* “soft”; PA *\*nyim-* “flexible, pliant, yielding, thin, soft”.
577. PN *\*nyim-/\*nyem-* “to stretch, to extend, to increase” > PAA *\*nam-/\*nəm-* “to stretch, to extend, to increase”; PD *\*ñim-* “to spread, to extend, to straighten; to be or become erect, upright, straightened, outstretched”.
578. PN *\*luk’-/\*lok’-* “to gather, to collect” > PIE *\*lek’-/\*lok’-* “to pick, to gather, to collect”; PAA *\*lak’-/\*lək’-* “to gather, to collect”; PFU *\*luke-* “to read, to count”.
579. PN *\*law-/\*ləw-* “to be or become dirty, tarnished, stained, soiled, filthy” > PIE *\*lew-/\*low-/\*lu-* “to make dirty; (n.) dirt, filth”; Afroasiatic: Semitic: Arabic *lāṭa* (base *lwt*) “to stain, to tarnish, to soil, to sully”, *lawṭa* “stain, blot, spot”.

580. PN *\*law-/\*lǝw-* “to shine” > PIE *\*lew-k[h]-/\*low-k[h]-/\*lu-k[h]-* “to shine, to be bright”; PAA *\*law-/\*lǝw-* “to shine, to gleam, to glitter”.
581. PN *\*law-añ-/\*lǝw-añ-* “to wash, to clean” (possibly related to the preceding if from “shining, bright, clean”) > PIE *\*lewñh-/\*lowñh-* “to wash”; S *luh* “to wash, to clean”, *luh* (-*luh*) “to be washed, cleaned”.
582. PN *\*lañ-/\*lǝñ-* “to make flow, to pour, to moisten, to wet” > PIE *\*leñh- [\*lañh-]* (extended form *\*leñh-w/u- [\*lañh-w/u-]*) “to pour out (liquids)”; PAA *\*lañ-/\*lǝñ-* “to make flow, to pour, to moisten, to wet”; S *läh* “to wash, to clean”, *läh* “laundry, wash”.
583. PN *\*lak[h]-/\*lǝk[h]-* “leg, foot” > PIE *\*lak[h]-* “leg, foot”; PAA *\*lak[h]-/\*lǝk[h]-* “leg, foot”.
584. PN *\*law-/\*lǝw-* “to bend, to twist, to turn” > PIE *\*lew-/\*low-/\*lu-* “to bend, to twist, to turn, to wind”; PAA *\*law-/\*lǝw-* “to bend, to twist, to turn”.
585. PN *\*law-/\*lǝw-* “to yearn for, to feel burning desire” > PIE *\*lew-b[h]-/\*low-b[h]-/\*lu-b[h]-* “to yearn for, to desire greatly”, (*\*lew-s-/\*low-s-/\*lu-s-* “to yearn for, to desire greatly, to lust after” (found only in Germanic); Afroasiatic: Semitic: Arabic *lā’a* (base *lw’*) “to be burning, inflamed, languishing (with love, longing)”, *lāba* (base *lwb*) “to be thirsty”, *lāha* (base *lwh*) “to be thirsty”.
586. PN *\*lamd-/\*lǝmd-* “low; low-lying ground, lowland, any piece of land” > PIE *\*lend[h]-/\*lond[h]-/\*lǝd[h]-* “low-lying ground, lowland, any piece of land”; PU *\*lamta* “low, low-lying ground, lowland”.
587. PN *\*lag-/\*lǝg-* “to put, to place, to lay, to set” > PIE *\*leg[h]-/\*log[h]-* “to put, to place, to lay (down), to set; to lie (down)”; PK *\*lag-/\*lg-* “to put, to plant”.
588. PN *\*lab-/\*lǝb-* “to take hold of, to grasp” > PIE *\*lab[h]-* “to take hold of, to grasp”; PAA *\*lab-/\*lǝb-* “to take hold of, to grasp”.
589. PN *\*lak[h]-(\*lǝk[h]-)* “to lick, to lap up” > PIE *\*lak[h]-* “to lick, to lap up”; PFU *\*lakka-* “to lick, to lap”.
590. PN *\*luk’-/\*lok’-* “to lick, to lap up, to gulp down, to swallow” > PK *\*lok’-* “to lick”; PAA *\*lak’-/\*lǝk’-* “to lick, to lap up, to gulp down, to swallow”.
591. PN *\*rak’-/\*rǝk’-* “to stretch, to extend, to draw out” > PIE *\*rek’-/\*rok’-/\*rk’-* “to stretch, to extend, to draw out”; PAA *\*rak’-/\*rǝk’-* “to stretch, to extend, to draw out”.

592. PN *\*rak<sup>[h]</sup>-/rək<sup>[h]</sup>-* “to twist, to turn, to bind” > Indo-European: Sanskrit *raśanā* “rope, cord, strap, rein, bridle, girdle”; PAA *\*rak<sup>[h]</sup>-/rək<sup>[h]</sup>-* “to twist, to turn, to bind”.
593. PN *\*ʔur-/ʔor-* “to move rapidly, quickly, hastily; to set in motion” > PIE *\*ʔer-/ʔor-/ʔr̥-* “to move, to set in motion”; PAA *\*ʔar-/ʔər-* “to move rapidly, quickly, hastily”; PD *\*ur-* “to hasten, to throw at high speed: (n.) rapidity, speed”.
594. PN *\*raw-añ-/rəw-añ-* “to be spacious, wide” > PIE *\*rew<sup>h</sup>h-/ru<sup>h</sup>h-* (> *\*rū-*) “wide, spacious”; PAA *\*rawaṇ-/rəwaṇ-/rawəṇ-/rəwəṇ-* “to be spacious, wide”.
595. PN *\*raʔ-ay-/rəʔ-ay-* “to see, to perceive” > PIE *\*reʔi-C-/roʔi-C-/rəʔi-C-* > (with syncope of *-i-*) *\*reʔ-C-/roʔ-C-/rəʔ-C-* > (with loss of the laryngeal) *\*rē-C-/rō-C-/rə-C-*; *\*reʔy-V-/roʔy-V-/rəʔy-V-* > (with metathesis) *\*reyʔ-V-/royʔ-V-/rəyʔ-V-* > (with loss of the laryngeal) *\*rey-V-/roy-V-/riy-V-* “to contemplate, to consider, to ponder, to reckon”; PAA *\*raʔay-/rəʔay-/raʔəy-/rəʔəy-* “to see, to perceive”.
596. PN *\*riy-/rey-* “to prosper, to flourish, to thrive” > PIE *\*riy-C-/rey-C-* > (*\*rīC-/*) *\*rēC-*; (*\*riy-V-/*) *\*rey-V-* “wealth, property, riches”; Afroasiatic: Semitic: Arabic *rā’a* (base *ry*) “to increase, to grow, to flourish, to thrive, to prosper”, *ray* “yield, returns, proceeds, income, interest, profit, share”.
597. PN *\*ʃur-ub-/ʃor-ub-* “to separate, to set apart, to put asunder; to be separated, set apart, abandoned” > PIE *\*ʃiorb<sup>[h]</sup>-/ʃr̥b<sup>[h]</sup>-* “to separate, to set aside or apart; to be separated, set apart, bereft”, *\*ʃiorb<sup>[h]</sup>-o-* “bereft, deprived of”; PAA *\*ʃarab-/ʃarəb-/ʃarab-/ʃarəb-* “to separate, to set apart, to set aside; to become separated, set apart”; PFU *\*orpa(sə)/orwa(sə)* “orphan, orphaned” (Indo-European loan); PD *\*oruv-* “to abandon; (n.) leaving, separation”.
598. PN *\*ram-/rəm-* “to stop, to rest, to relax” > PIE *\*rem-/rom-/rm̥-* “to stop, to rest, to relax”; PAA *\*ram-/rəm-* “to stop, to rest, to relax”.
599. PN *\*raq’-/rəq’-* “to observe, to watch, to regard attentively; to supervise, to control” > PIE *\*rek’-/rok’-* (lengthened-grade *\*rēk’-/rōk’-*) “to observe, to watch, to watch for, to care for”; PK *\*req’-* “to drive (cattle)”; PAA *\*rak’-/rək’-* “to observe, to watch, to regard attentively; to supervise, to control”.
600. PN *\*rak<sup>[h]</sup>-/rək<sup>[h]</sup>-* “to put together, to put in order, to arrange” > PIE *\*rek<sup>[h]</sup>-/rok<sup>[h]</sup>-* “to put together, to put in order, to arrange”; PFU *\*rakkə-* “to put together, to put in order, to arrange”.
601. PN *\*ruw-/row-* “to cut, tear, or break apart” > PIE *\*rew-/row-/ru-* “to cut, tear, or break apart”; PFU *\*rowa-* “to cut, to carve”.

## 8.2. New Etymologies

602. Proto-Nostratic *\*diy-/ \*dey-* “to suck, to suckle”:

- A. Proto-Indo-European *\*d[h]ē(i/y)-/\*d[h]ō(i/y)-* “to suck, to suckle”: Sanskrit *dháyati* “to suck, to drink”, (causative) *dhāpáyate* “to give suck, to nourish”, *dháyas-* “nourishing, refreshing”, *dhenú-h* “milk”, *dhātrí* “nurse”, *dhāyú-h* “voracious”, Ossetic *däin*, *däyun* “to suck”; Greek θήσθαι “to suckle”, θηλάζω “to suckle”, θηλή “teat, nipple”, θήλυς “female”, (Hesychius) θήνιον “milk”; Armenian *diem* “to suck”; Albanian *djathë* “cheese”; Latin *fēlō* (also *fellō*) “to suckle, to suck”, *fēmina* “a female, a woman”, *filia* “daughter”, *filius* “son”; Old Irish *denaid* “to suck”, *díth* “sucked”; Gothic *daddjan* “to suckle”; Old Swedish *dægga* “to suckle”; Old High German *tāen* “to suckle”; Low German (Westfalian) *daiern* “to raise on milk”; Old English *dēon* “to suck”, *delu* “nipple (of breast)”, *diend* “suckling”; Old Prussian *dadān* “milk”; Latvian *dēju*, *dēt* “to suck”, *dēls* “son”; Old Church Slavonic *dojō*, *dojiti* “to suckle; to milk”, *děti* “child”, *děva*, *děvica* “maiden, young girl”; Serbo-Croatian *dōjiti* “to suckle”, *dojka* “breast”.
- B. Proto-Kartvelian (reduplicated) *\*deda-* “mother”: Old Georgian *deday* “mother”; Mingrelian *dida* “mother”; Laz *dida* “old woman, grandmother”; Svan *dede* “mother, grandmother”. Svan (unreduplicated) *diya* “mother, mom”.
- C. Proto-Afroasiatic *\*day-/ \*dāy-* “teat, woman’s breast”: Proto-Semitic *\*dayd-* (> *\*dadd-* in Hebrew and Aramaic) “teat, woman’s breast” > Arabic (Ḥaḍramut) *dayd* “(married woman’s) breast; (cow’s) udder”; Hebrew *daḏ* “breast, teat, nipple”; Aramaic *daḏ* “teat”; Ugaritic *ḏd* “breast”. Semantic development as in Greek θηλή “teat, nipple”, cited above.

Buck 1949:4.41 breast (of a woman); 5.16 suck (vb.).

603. Proto-Nostratic *\*k’ar-/ \*k’ər-* “dark, dark-colored; dirty, soiled”:

- A. Proto-Indo-European *\*k’r-u-k’o-s, -eA [-aA]* (> *-ā*) “dirt, grime”: Greek (Hesychius) γρόξ “dirt in the nails”; Modern English (regional) *crock* “smut, soot, dirt”; Latvian *gruzis* “dirt, smut; rubbish”. Mann (1984—1987:300) *\*gruḡos, -ā* “dirt, grime”.
- B. Afroasiatic: Egyptian *qrm* “smoke”, *qrmt* “ashes”, *qrmts* “darkness”, *qrṯt* “dung”, (Demotic) *qrmts* “darkness”; Coptic *kromrm*, *krmrm* “to become dark”, *krmrōm* “to be dark” (reduplication of *kōrm* “smoke”), *kermi*, *krmes* “ash, soot, dust”,

*krmts* “smoke, mist; darkness, obscurity”, *krōm* “fire”, *kōrm* “smoke”, *kerēt*, *čerēt* “dirt, dung”. The following Highland East Cushitic forms may belong here as well, assuming semantic development as in Kannaḍa *kār* “blackness, rainy season” cited below: Burji *k’āraar-i* “rainy season”; Hadiyya *k’araat’o* “autumn, fall, season of small rains”; Kambata *k’araa-tu* “spring season”. Additional Cushitic cognates are given in Dolgopolsky (1973:206—207).

Note: The Dravidian and Altaic forms given in Bomhard—Kerns (1994:429—430, #274), are ambiguous and may belong here instead; they are as follows:

- C. Proto-Dravidian \**kār-*, \**kār-*, \**kār-* “black, dark”: Tamil *karu* “to grow black, to darken, to become dirty, to become impure, to mature”, *karukaru* “to become very black”, *karuppu* “blackness, darkness, spot, taint, moral defect”, *kāru* (*kāri-*) “to be blackened”, *karai* “spot, stain, rust, blemish, fault, blackness, darkness”; Malayalam *kara* “blackness, spot, stain, rust”, *karu* “black”, *karukka* “to grow black”, *kāru* “darkness, black cloud”; Kota *karp* “blackness, a demon”; Toda *kar* “dirt, spot, rust”, *karf-* (*karf-*) “to become black, dark”; Kannaḍa *kaṛaṅga* “to turn black”, *kaṛe*, *kaṛi* “blackness, to color black, stain, blot”, *karrage*, *karrane* “blackly, blackness”; Koḍagu *kara-* (*karap-*, *karat-*) “to become black”, *karapi* “blackness”, *karatē* “black”, *kare* “stain”; Telugu *kara* “blackness, a stain, blot; black”, *kaṛi* “black”; Konḍa *kaṛi* “blackness”, *kaṛ(i)ni* “black”. Burrow—Emeneau (1984:130, no. 1395). Tamil *kār* “blackness, blemish, defect”, *kāṛakam* “blackness”; Kannaḍa *kār*, *kāḍu* “blackness, black”, *kaṛḡu*, *kargu* “black”; Tuḷu *kāri*, *kāḷi* “blackish”; Maṇḍa *kaṛindi* “black”; Kuwi *kār-* “to become black”, *kāṛia* “black”. Burrow—Emeneau (1984: 139, no. 1494). Tamil *karu* “black”, *karukkal* “darkness, twilight, cloudiness, sunburnt paddy crop”, *karukku* (*karukki-*) “to darken by heat, to burn, to scorch, to toast, to fry”, *karuku* (*karuki-*) “to be scorched, blackened by fire or sun, to become dark in the evening”, *karumai* “blackness”; Malayalam *kari*, *karu* “black; charcoal, coal”, *karikkal*, *karukkal* “twilight, dusk, frying”, *karima*, *karuma* “blackness”, *karimpu* “dark color, gray”; Kota *kar* “black”; Kannaḍa *karidu* “black”, *kargu* “to turn black”, *kare* “blackness”; Tuḷu *kari* “soot, charcoal”, *kariya* “black”; Koraga *kardī* “black”; Telugu *kaggu* “to fade, to turn black (through heat, smoking)”; Naiki (of Chanda) *karan*, *karen*, *kareyan* “black”. Burrow—Emeneau (1984:118, no. 1278[a]). Tamil *kār* “blackness, darkness, cloud, rainy season”, *kār* “to darken, to grow black”, *kāri* “blackness, crow, black bull”; Kannaḍa *kār* “blackness, rainy season”; Tuḷu *kāryu*, *kāri* “black, dark”; Gondi *kārial*, *kāryal*, *kāriyal*, *karial*, *kaṛial*, *kareyal*, *kari*, *karkāl* “black”. Burrow—Emeneau (1984:118—119, no. 1278[c]).

- D. Proto-Altaic *\*kara* “black”: Mongolian *qara* “black, dark, obscure”; Moghol *qarō* “black”; Dagur *χara*, *χar* “black”; Monguor *χara* “black”; Ordos *χara* “black”; Buriat *χara* “black”; Khalkha *χar᠋ᠳ* “black”; Kalmyk *χar᠋ᠳ* “black”; Turkish *kara* “black”; Turkmenian *gara* “black”; Tuvinian *kara* “black”; Yakut *χara* “black”; Chuvash *χura* “black”; Manchu *qara* “black (of animals)”.

Buck 1949:15.88 dirty, soiled.

On the other hand, the following should be added to #274, Proto-Nostratic *\*k<sup>[h]</sup>jar-/* *\*k<sup>[h]</sup>ǝr-* “black, dark”:

- B. Afroasiatic: Egyptian (Demotic) *krky* “filth”; Coptic *čorǧ(e)*, *ǧerǧi* “dirt, filth”, *r-čorǧ* “to become filthy”.

604. Proto-Nostratic *\*rak’-/rək’-* “to wet, to moisten”:

- A. Proto-Indo-European *\*rek’-/rok’-* “to wet, to moisten” (*\*rek’-nó-* “rain” apparently deglottalized to *\*rek-nó-* in Germanic *\*reg-na-z* “rain”): Gothic *rign* “rain”; Old Icelandic *regn* “rain”, *regna*, *rigna* “to rain”, *raki* “dampness, wetness”, *rakr* “damp, wet”; Old English *regn*, *rēn* “rain”, *regnian* “to rain”; Old High German *regan* “rain”, *reganōn* “to rain”. Perhaps also Latin *rigō* “to wet, to moisten, to bedew” and Albanian *rredh* “to flow, to pour”.
- B. Proto-Afroasiatic *\*rak’-/rək’-* “to sprinkle, to spray”: Proto-Semitic *\*rak’-* (*\*rak’-aḥ-*, *\*rak’-ay-*) “to sprinkle, to spray” > Geez / Ethiopic *raḫḫa* “to sprinkle, to spray”, *raḫaya* “to sprinkle, to asperse, to sprinkle with holy water to drive out demons, to cleanse with holy water”; Tigrinya *rākāyā* “to sprinkle, to sprinkle holy water (on a place or a person)”; Amharic *räččä* “to sprinkle water”; Gurage *reččä* “to spray water, to sprinkle water”; Argobba *räččä* “to sprinkle water”.

BUCK 1949:1.75 rain; 15.83 wet, damp.

605. Proto-Nostratic *\*rat<sup>[h]</sup>-/rət<sup>[h]</sup>[-]* “to turn, to roll; to run”:

- A. Proto-Indo-European *\*ret<sup>[h]</sup>-/rot<sup>[h]</sup>[-]* “to turn, to roll; to run”: Sanskrit *rátha-h* “chariot, especially a two-wheeled war-chariot; wagon, cart”; Avestan *raθa-* “wagon, chariot”; Latin *rota* “wheel”, *rotundus* “round, circular”; Umbrian *amb-retuto* “to walk around”; Old Irish *roth* “wheel”, *rethid* “to run, to flow”, *riuth* “running”; Welsh *rhod* “wheel”, *rhedaf* “to run”; Old English *raðe*, *ræd* “swift”;

Old High German *rado*, *rato* “quickly”; Lithuanian *rātas* “wheel”, *rātai* “cart, vehicle”, *ratėlis* “spinning-wheel”, *ritū*, *risti* “to roll”.

- B. Proto-Afroasiatic *\*rat[h]-/\*rət[h]-* “to turn, to roll; to run”: Semitic: Arabic *rata'a* “to go away, to depart; to gallop with short steps”, *rataka* “to run with short steps, to trot”. Proto-Southern Cushitic *\*rat-* “to continue onward” > Ma'a *iritimé/iratimé* “crossing, ford”; Dahalo *raṭ-* “to walk about”, *rattid-* “to continue (something)”.

Buck 1949:10.46 run (vb.); 10.75 chariot, wagon, cart; 10.76 wheel.

606. Proto-Nostratic *\*was-/\*wəs-* “to add (to), to augment, to increase, to heap up”:

- A. Proto-Kartvelian *\*ws<sub>1</sub>-* “to fill (up): Georgian *vs-eba* “to fill (up)”; Mingrelian *(p)š-* “to fill (up)”; Zan *pš-* “to fill (up)”; Svan *li-gwš-ile* “to fill something”, *gweši* “full”.
- B. Proto-Afroasiatic *\*was-/\*wəs-* “to add (to), to augment, to increase, to heap up”: Proto-Semitic *\*was-* (*\*was-ak[h]-*, *\*was-ak'-*) “to add (to), to augment, to increase, to heap up” > Geez / Ethiopic *wassaka* “to add, to join to, to augment, to supplement, to increase”; Tigrinya *wässākā* “to add”; Tigre *wässāka* “to add”; Amharic *wässākā* “to add”; Arabic *wasaka* “to store, to heap up, to load freight”.

Buck 1949:13.21 full.

607. Proto-Nostratic *\*mar-/\*mər-* “to strive against, to oppose”:

- A. Proto-Kartvelian *\*maržw-* “to conquer, to vanquish, to defeat, to overcome”: Georgian *maržv-eba* “to conquer, to vanquish, to defeat, to overcome”; Mingrelian *moržgv-* “to conquer, to vanquish, to defeat, to overcome”, *moržgvi*, *maržgvi* “victory, success”; Svan *li-murž-i* “to help somebody” (Georgian loan).
- B. Proto-Afroasiatic *\*mar-/\*mər-* “to oppose, to contend with, to dispute”: Proto-Semitic *\*mar-ad-* “to revolt, to rebel, to assail, to attack” > Arabic *marada* “to be refractory, recalcitrant, rebellious; to revolt, to rebel”; Epigraphic South Arabian *mrd* “(warlike) incursion”; Hebrew *māraḏ* “to rebel”, *mereḏ* “rebellion, revolt”; Syriac *māraḏ* “to rebel, to escape, to resist, to prevail”; Geez / Ethiopic *marrada* “to leap, to hasten, to walk fast, to run about, to rush in, to attack, to bother, to annoy”, (with reduplication of third radical) *mardada* “to hasten”; Tigrinya *märräd* “incursion, raid, pillage”; Amharic *märrädä* “to hasten, to raid, to pillage”. Proto-Semitic *\*mar-ay-* “to argue, to rebel against, to contend with” >



Arabic (base) *mry* “to wrangle, to argue, to dispute”; Hebrew *mārāh* “to be contentious, refractory, rebellious”; Syriac *mārā* “to contend with”.

- C. Dravidian: Tamil *maṛam* “valor, bravery, anger, wrath, enmity, hatred, strength, power, victory, war, killing, murder”, *maṛal* “hate, enmity, disagreement, fight, war, death”, *maṛalu* (*maṛali*-) “to oppose, to give fight, to kill”, *maṛavōṇ* “warrior”; Malayalam *maṛam* “disagreement, war”, *maṛal* “death”.

Buck 1949:20.11 fight (vb.); 20.13 war; 20.41 victory.

608. Proto-Nostratic *\*dag-/dæg-* “to put, to place, to set; to stand”:

- A. Proto-Indo-European *\*d<sup>h</sup>jeg<sup>h</sup>-om-*, *\*d<sup>h</sup>g<sup>h</sup>-om-* “earth, ground; human being”: Sanskrit (*\*d<sup>h</sup>gy<sup>h</sup>-om- > \*džham- > \*ḍzham- > \*ṭṣam- >\*) *kṣam-* “earth, ground”; Greek *χθών* “earth, ground; a particular land or country”, *χαμαί* “on the ground”; Albanian *dhe* “earth, land”; Latin *humus* “earth, ground, soil”, *homō* “human being, man”; Gothic *guma* “man”; Old English *guma* “man, hero”; Old Irish *dú* “place”, *duine* “person”; Old Church Slavic *zemlja* “earth”; Old Lithuanian *žmuo* “human being, person”; Tocharian A *tkam*, B *kem* “earth, ground”; Hittite *te-(e-)kán* “earth, ground”, *da-ga-(a-)an* “to the ground”; Hieroglyphic Luwian *takami-* “earth, land”; Luwian *ti-ya-am-mi-iš* “earth”. The unextended stem *\*d<sup>h</sup>jog<sup>h</sup>-* may possibly be preserved in Hittite (dat.-loc.) *ta-ki-ya* as in *ta-ki-ya ... ta-ki-ya* “in this place ... in that place”, literally, “this one here ... that one there” (not, then, connected with *da-* “two” as suggested by Kronasser 1966:I, 210). Semantic development as in Svan *gim* “earth, land, soil” (see below). According to Klimov (1991:332), the following Kartvelian forms represent an early borrowing from Indo-European: Proto-Kartvelian *\*diṛwam ~ \*diṛom* “black earth” > Georgian (dialectal) *dil(l)ṛvam* “black earth”, (toponym) *Diyom* a region inside of Tbilisi, occupying the so-called “Diyomian Field”; Svan *diṛwam* “black earth”.*
- B. Proto-Kartvelian *\*dg-* “to stand”: Georgian *dg-/deg-* “to stand”, *dg-ma* “to put, to place, to set; to stand”, *a-dg-il* “place”; Mingrelian *dg-* “to stand”; Zan *dg-* “to stand”; Svan *li-gne* “to stand”. Proto-Kartvelian *\*dgam-/dgm-* “to put, to place, to set; to stand”: Georgian *dgam-/dgm-* “to put, to place, to set”; Mingrelian *dgum-*, *dgim-* “to put, to place, to set”; Zan *dgim-* “to put, to place, to set”; Svan *li-gem* “to stand”, *gim* “earth, land, soil”. Proto-Kartvelian *\*dg-in-* “to put, to place, to set”: Georgian *dgin-/dgen-* “to put, to place, to set”; Mingrelian *dgin-* “to put, to place, to set”; Zan *dgin-* “to put, to place, to set”.

- C. Proto-Afroasiatic *\*dag-/dæg-* “to put, to place, to set; to stand”: Semitic: Arabic *dağana* “to remain, to stay, to abide; to get used to, to become accustomed to, to become habituated; to become tame, domesticated”. Berber: Ahaggar *édeh* (pl. *ideggen*) “place”; Zenaga *ežgen* “to put”. East Cushitic: Proto-Boni *\*deg-* “to settle down”.
- D. Uralic: Proto-Ugrian *\*taγ3* (*\*tak3*) “place, site” > (?) Ostyak / Xanty (Vah) *tāγj*, (Upper Demjanka) *tāχə*, (Obdorsk) *tāχα* “place, site”; (?) Hungarian *táj* “region, tract, country, land”.
- E. Sumerian *dag* “residence, dwelling-place”.

Buck 1949:1.21 earth, land; 12.11 place (sb.); 12.12 put (place, set, lay); 12.15 stand (vb. intr.). This replaces etymology #81. It should be noted here that Klimov (1991:327 and 332) rejects the comparison of Proto-Kartvelian *\*tiqa* “earth, clay” (Illič-Svityč writes *\*diqa*, as do Gamkrelidze—Ivanov 1984.II: 877) with Proto-Indo-European *\*dhǵhem-*, *\*dhǵhom-* “earth, ground” as proposed by Illič-Svityč (1971— :I, 220, no. 69).

Meanwhile, etymology #81 should be rewritten as follows:

Proto-Nostratic *\*diq[ʰ]/deq[ʰ]-* “to crush, to pound, to mold or knead (clay); (n.) earth, clay, mud”:

- A. Proto-Indo-European (*\*dik[ʰ]-* > [with progressive voicing assimilation] *\*dig[ʰ]-* >) *\*d[ʰ]ig[ʰ]-* (secondary full-grades *\*d[ʰ]eyg[ʰ]-*, *\*d[ʰ]oyg[ʰ]-*) “to pound, to mold (clay), to knead (dough); (n.) clay”: Sanskrit *déhmi* “to smear, to anoint, to plaster”, *dehí* “mound, bank, surrounding wall”; Avestan *daēza-* “wall (originally made of clay or mud bricks)”; Greek *τείχος* “a wall, especially a wall around a city”, *τοίχος* “the wall of a house or court”; Latin (with *n*-infix) *figō* “to shape, to fashion, to form, to mold”; *figūra* “form, shape, figure, size”, *figulus* “a worker in clay, a potter”; Oscan *feihúss* “walls”; Gothic *digan* “to knead, to form out of clay”, *daigs* “dough”; Old Icelandic *deig* “dough”; Old English *dæg* “dough”; Lithuanian *dýžti* “to beat soundly”; Old Church Slavonic *zǫdǫ*, *zǫdati* “to build”, *zǫdъ* “wall”; Ukrainian *d’ižá* “baker’s trough”; Armenian *dizanem* “to collect, to put together”.
- B. Proto-Kartvelian *\*diq[ʰ]a* “earth, clay”: Old Georgian *tiqa* “earth, clay, mud” (Modern Georgian *tixa*); Mingrelian *dixa*, *dexa* “soil, ground, earth”; Laz (*n*)*dixa* “earth”.

- C. Proto-Afroasiatic *\*dak[h]/-/\*dək[h]-* “to crush, to pulverize, to mix, to knead (clay)”: Proto-Semitic *\*dak[h]-ak[h]-* “to mix, to crush, to flatten” > Arabic *dakka* “to make flat, level, or even; to smooth, to level, to ram, to stamp, to tamp (earth, the ground, a road); to press down, to beat down, to weigh down; to demolish, to devastate, to destroy, to ruin; to mix, to mingle; to be crushed, to be leveled”, *dakk* “level ground; devastation, destruction, ruin”; Akkadian *dakāku* “to crush”. Proto-Semitic *\*dak[h]-al-* “to knead clay; to tread, to tread down” > Arabic *dakala* “to knead clay; to tread, to tread down”, *dakala-t* “thin clay or loam”. Proto-Semitic *\*dak[h]-aw/y-* “to crush” > Hebrew *dāḫāh* “to crush, to be crushed”. Proto-Semitic *\*dak[h]-aʔ-* “to crush” > Hebrew *dāḫāʔ* “to crush”, *dakkāʔ* “dust (as pulverized)”. Proto-Semitic *\*da-wa-k[h]-* “to pound, to crush” > Arabic *dāka* “to grind, to pound”; Hebrew *dūḫ* “to pound, to beat (in a mortar)”; Akkadian *dāku* “to kill”; Ugaritic *dk* “to pound, to mix”.
- D. Dravidian: Konḍa *tig-* “to press down hard, to lay pressure on”; Pengo *tig-* (*tikt-*) “to push”; Maṇḍa *tig-* “to push”.
- E. (?) Sumerian *dih* “to press, to push”.

Buck 1949:1.214 mud; 5.54 knead; 5.56 grind; 7.27 wall; 9.73 clay. Fährnrich (1994:254) compares Sumerian *dih* “(stone) slab for molding clay, stone” with the Kartvelian forms.

609. Proto-Nostratic *\*t[h]ik[h]/-/\*t[h]ek[h]-* “to shine, to glow, to burn”:

- A. Proto-Afroasiatic *\*t[h]ak[h]/-/\*t[h]ək[h]-* “to glow, to burn; to kindle, to ignite”: Semitic: Geez / Ethiopic *takkwasa* “to ignite, to set on fire, to burn” (probably from Amharic); Tigre *tākṣa* “to cauterize”; Tigrinya *tākkwāsā* “to burn, to brand cattle”; Amharic *tākkwāsā* “to burn”; Gurage *tākāsā* “to light a fire”. Egyptian *tk* “to burn, to kindle”, *tk* “torch, candle, flame; to illumine”, *tkw* “rite of torch burning”; Coptic *tōk* “to kindle (fire), to bake”, *tik* “spark”, *intōk* “oven, furnace”, *tōc* “to bake”.
- B. Dravidian: Tamil *tikaṛ* “to shine (as diamonds), to glimmer (as stars), to be brilliant”, *tikaṛcci*, *tikaṛvu* “brightness, luster, splendor”, *tekaṛ* “to be manifest, to shine”, *tikaṛttu* (*tikaṛtti-*) “to explain clearly, to make clear, to show clearly, to beautify, to adorn”; Malayalam *tikaṛuka* “to shine”; Malto *téqe* “to shine, to glow”.

Buck 1949:1.82 flame (sb.); 1.85 burn (vb.); 1.86 light (vb.), kindle; 5.24 bake; 5.25 oven; 15.56 shine.

610. Proto-Nostratic *\*rag-/ræg-* “to stir, to move, to shake”:

- A. Proto-Indo-European *\*rog[h]-* “to stir, to move”: Middle High German *regen* “to stir, to move, to rouse”, *rege* “movement”; Swedish *ragla* “to toss, to sway”; Old Irish *ráig* “outburst”.
- B. Proto-Afroasiatic *\*rag-/ræg-* “to shake”: Proto-Semitic *rag-ap[h]-* “to stir, to shake; to shake off, to make fall; to fall down” > Aramaic *rəyaφ* “to stir, to shake”; Arabic *rağafa* “to agitate, to convulse, to shake; to tremble, to quake, to be shaken”; Mehri *həgrūf* “to shiver, to shiver with fever”; Jibbāli *ergəf* “to shiver”; Ḥarsūsi *argəf* “to shake (with fever)”; Geez / Ethiopic *ragafa* “to fall to the ground (fruit, leaves)”; Tigrinya *rägäfä* “to fall down (fruit, leaves)”; Gurage *rägäfä* “to fall down (fruit, leaves)”; Harari *rägäfä* “to fall to the ground (fruit, leaves)”; Amharic *rəggäfä* “to fall to the ground (fruit, leaves)”; Argobba (*ar*)*rəggäfä* “to shake”. Proto-Semitic *rag-a3-* “to shake, to quake, to tremble” > Hebrew *rāyaz* “to be agitated, to quake, to quiver; to be excited, perturbed”; Phoenician *rgz* “to disturb”; Aramaic *rəyaz* “to tremble, to rage”. MURTONEN (1989:393). Proto-Semitic *rag-ag-* “to quiver, to shake” > Arabic *rağğa* “to convulse, to shake, to rock, to tremble”; Mehri *rāttəg* “(ground) to quiver, to shake”. Proto-Semitic (reduplicated) *rag-rag-* “to tremble, to quake, to sway” > Arabic *rağrağa* “to tremble, to quake, to sway”. Proto-Semitic *rag-ad-* “to tremble” > Arabic *rağada* “to tremble”.

Buck 1949:10.23 fall (vb.); 10.26 shake (vb. tr.).

611. Proto-Nostratic *\*rum-/rom-* “to grow or become dark, to darken”:

- A. Proto-Indo-European *\*remH-/romH-/rmpH-* “dark, dark-colored”: Sanskrit *rāmā-h* “dark, dark-colored, black”, *rāmī* “darkness, night”, *rātrī* (< *\*rmpH-*) “night, darkness or stillness of night”; Middle High German *rām*, *rōm* “dirt, soot”, *rāmec*, *rāmīg* “dirty, sooty”; Old English *romēi* “sooty”.
- B. Proto-Kartvelian *\*rum-* “to grow or become dark, to darken”: Georgian *rum-* “to grow or become dark, to darken”; Mingrelian *rum-* “to grow or become dark, to darken”.
- C. Proto-Finno-Ugrian *\*r[ü]mke* “dark”: Lapp *rāw'ke-* “to wink (the eyes)”, (Lule) *rām'kâ-*, *rāw'kâ-* “to wink”, *rām'ko* “closed (only of the eyes)”; Cheremis / Mari (West) *rəm* “twilight, dusk”, (East) *rūmbalge* “twilight, dusk”; Votyak / Udmurt

*žomyt* “twilight, dusk”; Zyrian / Komi *rōmyd* “twilight, dusk”; Ostyak / Xanty *rimək* “dusk, twilight, dark, darkness”, *riməkəl* “to get dusk, to get dark”. Collinder (1977:124 [1960:413 \**remke*-]); Rédei (1986—1988:747) \**r̥m̥z* “color”.

Buck 1949:1.62 darkness; 14.42 night; 15.63 dark (of color). Dolgopolsky (1992:321, no. 38).

612. Proto-Nostratic \**waly*-/ \**wəly*- “to be open, to be vacant; (n.) open space, open land, field, meadow”:

- A. Proto-Indo-European \**wel*- “field, meadow”: Hittite *wellu*- “meadow”; Greek ἡλύσιον “the Elysian fields”. Gamkrelidze—Ivanov (1984.II:824) \**uel*- “meadow”.
- B. Proto-Kartvelian \**wel*- “field”: Georgian *vel*- “field”; Mingrelian *ve(l)*- “field”.
- C. Dravidian: Tamil *veli* “to be open or public; to be vacant, empty; (n.) outside, open space, plain, space, intervening space, gap, room, openness, plainness, publicity”, *veḷippu* “outside, open space, enclosed space”; Malayalam *veli* “open field; notoriety; outside”; Telugu *veli* “the outside, exterior, excommunication; outside, external”, *velalu* “to go or come out, to start”, *velalucu* “to send out”, *velupala* “the outside, exterior; outside, external”, *vellaḍi* “open place; publicity; openness”, *veliparacu*, *velipuccu* “to make public or known”; Parji *valip*- (*valit*-) “to expel, to drive away”; Konda *veli* “outside”.
- D. Sumerian *ùl* “field, cultivated land, meadow”, *ul*<sub>4</sub> “field, meadow”, *ùlul* “field, meadow, open land, steppe”.

Buck 1949:1.23 plain, field.

613. Proto-Nostratic \**k'wam*-/ \**k'wəm*- “to burn slowly, to smolder; to be hot, to be red-hot, to be glowing; to smoke”:

- A. Proto-Kartvelian \**k'wam*-/ \**k'wm*- “to smoke”: Georgian *k'vem-a* “to smoke”; Mingrelian *k'um*- “to smoke”; Zan *mk'om*- “to smoke”; Svan *k'wām*- “to smoke”. Proto-Kartvelian \**k'wam*ḷ- “smoke”: Georgian *k'vamli* “smoke”; Mingrelian *k'uma* “smoke”; Laz *k'oma* “smoke”; Svan *k'wām* “smoke, smut”.
- B. Afroasiatic: Semitic: Akkadian *ḫamū* “to burn, to consume by fire”.
- C. Uralic: Proto-Finno-Volgaic \**kūma* “hot, red-hot; fever” > Finnish *kuuma* “hot”, *kuume* “fever”, *kuumoitta*- “to make hot, to heat”, *kuumuus* “heat”; Estonian *kuum*

“hot, red-hot”, *kuuma-* “to be red-hot, to glow”, *kuumata-* “to make red-hot”; Mordvin *kumoka* “fever”.

- D. Dravidian: Tamil *kumpu* (*kumpi-*) “to become charred (as food when boiled with insufficient fire)”, *kumai* “to be hot, sultry”; Malayalam *kumpal* “inward heat”, *kummu* expression descriptive of heat, *kumuruḱa*, *kumiruḱa* “to be hot, close”, *kumural* “oppressive heat”; Kannaḍa *kome* “to begin to burn (as fire or anger)”; Tulu *gumulu* “fire burning in embers”, *gumuluni* “to be hot, to feel hot (as in a fit or fever)”; Telugu *kummu* “smoldering ashes”, *kumulu* “to smolder, to burn slowly underneath without a flame, to be consumed inwardly, to grieve, to pine”; Gondi *kum* “smoke”.

Buck 1949:1.83 smoke (sb.).

614. Proto-Nostratic *\*dur-/d̥or-* “sheep, ram”:

- A. Kartvelian: Georgian *dur-aq̄-* “yearly capricorn”.
- B. Proto-Afroasiatic *\*d̥ər-* “sheep, ram”: Omotic: Wolaita (Beke) *d̥ūr̥sa*, *d̥orsa* “sheep”; Oyda *duro*, *dorsa* “sheep”; Basketo *d̥ōri* “sheep”; Doko *dori* “sheep”; Zayse *dorō* “sheep”; Koyra *dorō* “sheep”; She *dor*, *doy* “ram”. Chadic: Hina *duru(p)* “a calf”; Mafa *d̥r̥ok* “ram”.

Buck 1949: 3.25 sheep; 3.26 ram.

615. Proto-Nostratic *\*dur-/d̥or-* “hole, opening”:

- A. Proto-Kartvelian *\*duro* “hole, hollow”: Georgian *duro* “loop-hole”; Mingrelian *duru* “hollow, depression, hole, pit”.
- B. Proto-Dravidian *\*tor-* “hollow, hole, cavity (in a tree)”: Kannaḍa *toralu*, *torale* “hole”, *torē*, *ḍorē* “hollow, hole”; Telugu *torā*, *torāṭa*, *torra* “hole, cavity (in a tree)”; Gondi *dora* “hole (in a tree)”.

Buck 1949:12.85 hole. Blažek (1992a:115, no. 7 [note that, at 1992b: 130, Blažek also compares Proto-Indo-European *\*dhur-* “to pierce”, which is, indeed, quite possible; but cf. Bomhard—Kerns 1994:323—324, no. 144, for an alternative proposal]).

616. Proto-Nostratic *\*ʔab-/ʔəb-* “to be or become dry, to dry up, to dry out”:

- A. Proto-Kartvelian *\*abed-* “tinder”: Georgian *abed-* “tinder”; Mingrelian *obed-* “tinder”; Zan *obed-* “tinder”; Svan *haböd-*, *habed-*, *hobed-* “tinder”.

- B. Proto-Afroasiatic \*ʔab-/ʔəb- “to be or become dry, to dry up, to dry out”: Proto-Semitic \*ʔab-al- “to dry up, to dry out” > Akkadian *abālu* “to dry up, to dry out”, *ablu* “dry, dried” (said, for example, of wood as in “dry [fire]wood”); Hebrew *ʾāḇal* “to dry up”. Egyptian *ibī* “to be thirsty”, *ib* “thirsty man”, *ibt* “thirst”.

Buck 1949:5.15 thirst (sb.); 15.84 dry. Note: This etymology is an alternative to the one proposed in Bomhard—Kerns (1994:525—526, no. 377).

617. Proto-Nostratic \*ʔib-/ʔeb- “to lose (one’s way or one’s mind), to go astray”:

- A. Proto-Afroasiatic \*ʔab-/ʔəb- “to lose (one’s way or one’s mind), to go astray; to be lost”: Proto-Semitic \*ʔab-ad- “to lose (one’s way or one’s mind), to go astray; to be lost” > Arabic *ʾabada* “to roam in a state of wildness, to run wild, to be shy”; Hebrew *ʾāḇaḏ* “to perish, to vanish, to be lost”; Aramaic *ʾəḇaḏ* “to be lost”; Ugaritic *ʾbd* “perished”; Akkadian *abātu* “to destroy, to lay waste, to ruin”; Geez / Ethiopic *ʾabda*, *ʾabda* “to be insane, to become enraged, to rage, to be mad, to be out of one’s mind, to become a fool, to be foolish”; Tigre *ʾabbāda* “to deceive”, *ʾəbd* “fool-hardy”; Tigrinya *ʾabbādä* “to entice with promises”, *ʾabādä* “to go mad, to become insane”; Amharic *abbādä* “to go insane, to go mad”.
- B. Dravidian: Tamil *ēppiṛāci*, *ēppiyan* “simpleton, fool”; Kannaḍa *ēbrāsi*, *ebaḍa* “a foolish, silly man” (f. *ebaḍi*); Tuḷu *ebuḷante* “half-witted, silly”; Telugu *ebberāsi*, *ebbrāsi* “a slovenly person”. Semantic development as in Geez / Ethiopic *ʾabda*, *ʾabda* “to be insane, to become enraged, to rage, to be mad, to be out of one’s mind, to become a fool, to be foolish”.

Buck 1949:17.22 foolish, stupid; 17.23 insane, mad, crazy.

618. Proto-Nostratic \*wan-/wən- “to stay, to remain”:

- A. Indo-European: Proto-Germanic \*wunan “to dwell, to abide, to remain” > Old Icelandic *una* “to dwell, to abide”; Old High German *wonēn* “to dwell, to remain”; Old Saxon *wunon*, *wonon* “to dwell, to remain”; Old English *wunian* “to dwell, to remain”, *wuna* “habit, custom”; Old Frisian *wonia*, (*w*)*unia* “to dwell, to remain”. Different from Proto-Indo-European \*wen- “to desire” (see below, no 619).
- B. Proto-Afroasiatic \*wan-/wən- “to stay, to remain”: Semitic: Arabic *wanaka* “to dwell amongst”. Egyptian *wnn* “to be, to exist”; Coptic *won* “to be”.

- C. Sumerian *unu*, *únu*, *unu*, “dwelling, residence; dwelling-place, place of residence”.

Buck 1949:7.11 dwell; 9.91 be.

619. Proto-Nostratic \**win-/wen-* “to strive for, to wish for, to desire”:

- A. Proto-Indo-European \**wen-/won-/wō-* “to strive for, to wish for, to desire”: Sanskrit *vánati*, *vanóti* “to like, to love, to wish, to desire; to gain, to acquire, to procure; to conquer, to win, to become master of, to possess”, *vánas-* “longing, desire”; Avestan *vanaiti* “to win, to strive for, to conquer”; Latin *venus* “charm, loveliness, attractiveness; sexual love”, *vēnor* “a hunt”, *venia* “grace, indulgence, favor”, *veneror* “to ask reverently, to beseech with awe; to revere, to respect, to worship, to honor”; Old Irish *fine* “a family”; Gothic *wēns* “hope”, *winnan* “to suffer”, *winna* “passion”; Old Icelandic *una* “to be content”, *vinr* “friend”, *yndi* “delight, happiness”, *væna* “to give one hope”, *ván* “hope, expectation”, *vænn* “fine, beautiful”, *vinna* “to work, to labor, to do work”, *vinna* “work, labor”, *vinningr* “gain, profit”, *æskja* “to wish”; Old English *wynn* “joy”, *wine* “friend”, *wēnan* “to hope, to expect”, *wēn*, *wēnung* “hope, expectation”, *winnan* “to toil, to endure hardship, to suffer”, *gewinnan* “to gain, to acquire, to conquer, to take”, *winn* “labor, effort, hardship”, *wýscan* “to wish”; Old Frisian *wēna* “to hope, to expect”, *wēn* “opinion”, *winna* “to obtain”; Old Saxon *wān* “hope”, *winnan* “to suffer, to win”; Old High German *wān* “opinion, hope”, *gewinnan* “to gain by labor”, *wunna* “joy”, *wunsken* “to wish”.

- B. Proto-Afroasiatic \**wan-/wān-* “to be pleasant, joyful”: Egyptian *wnf* “to be joyful, to rejoice”; Coptic *unof* “to rejoice”. Proto-Southern Cushitic \**win-* or \**wan-* “nice, pleasant, comfortable” > Iraqw *wanana* “soft, gentle”, *wan'es-* “to soften”, *wanana'ut-* “to be loose”; Dahalo *wine* “good, clean”. Semantic development as in Old High German *wunna* “great joy, bliss” and Old English *wynn* “joy, rapture, pleasure, delight, gladness”, *wynsum* “pleasant, delightful, joyful, merry”.

- C. Dravidian: Tamil *vēṇṭu* (*vēṇṭi-*) “to want, to desire, to beg, to entreat, to request”, *vēṇṭiyavan* “friend, well-wisher”, *vēṇ* “desire”; Malayalam *vēṇam*, *vēṇṭum* “it must, ought, is desired”, *vēṇ* “necessary”, *vēṇṭa* “useful, required”; Kannada *bēṭa*, *bēṇṭa* “longings, sexual passion, amorous pastime”; Telugu *vēḍu* “to pray, to beg, to ask, to wish, to desire”, *vēḍuka* “pleasure, joy, desire, wish, fun”.

Buck 1949:16.22 joy; 16.61 will, wish (vb.); 16.62 desire (vb.); 20.41 victory.

620. Proto-Nostratic \**wan-/wān-* “share, portion, (period of) time”:



- A. Kartvelian: Svan (*w*)*ona* “time”.
- B. Afroasiatic: Egyptian *wnw-t* “hour, time”; Coptic *unu* “hour”.
- C. Dravidian: Kannaḍa *ontu*, *vantu*, *vanti* “a turn, time”, *ontu* “share, portion”; Tuḷu *onti* “a turn, time”, *ontu* “a turn, time; once”, *ontigē* “a contribution”; Telugu *vantu* “share, portion, a turn by rotation, a round”.

Buck 1949:14.11 time.

621. Proto-Nostratic *\*wan-/wən-* “first, first-born, eldest”:

- A. Afroasiatic: Proto-Highland East Cushitic *\*wanaa* “first” > Burji *wanáy* “first-born”, *wanawwa* “eldest sister”, *wanay*, *wonáy* “eldest brother”; Kambata *wana(a) beetu* “first-born” (*beetu* = “child”), *wanabii* “first”.
- B. Uralic: Proto-Finno-Permian *\*wanša* “old” > Finnish *vanha* “old”, *vanhemmat* “parents”; Estonian *vana* “old”; Votyak / Udmurt *vuž* “old”; Zyrian / Komi *važ* “old”. (?) Proto-Finno-Ugrian *\*wšm3* “old” > Zyrian / Komi *vener* “old”; Hungarian *vén* “old”.
- C. Dravidian: Kolami *vanna* “brother’s wife”; Naikri *vanna* “older brother’s wife”; (?) Konda *oni* “older brother’s wife, maternal uncle’s daughter (older than person concerned)”; (?) Pengo *oni* “older brother’s wife”.

Buck 1949:13.34 first; 14.15 old.

622. Proto-Nostratic *\*p<sup>h</sup>]ar-/p<sup>h</sup>]ər-* “to be fond of, to care for, to feel affection for; to be pleased, happy, satisfied, or delighted with”:

- A. Proto-Indo-European *\*p<sup>h</sup>]reyH-/p<sup>h</sup>]royH-/p<sup>h</sup>]riH-* (> *\*p<sup>h</sup>]rī-*) “to be fond of, to care for, to feel affection for; to be pleased, happy, satisfied, or delighted with”: Sanskrit *prīṇāti* “to please, to gladden, to delight, to gratify, to cheer, to comfort, to soothe, to propitiate; to be pleased or satisfied with, to delight in, to enjoy”, *prīyate* “to be pleased”, *prīyá-h* “beloved, dear”, *premán-* “love, affection, kindness, fondness”, *préyas-* “dearer, more agreeable; a lover, a dear friend” *prīti-h* “pleasure, joy, gladness, satisfaction”; Avestan *frīnāiti* “to love, to praise”, *fryō* “dear”; Welsh *rhydd* “free”; Gothic *freis* “free”, *friei*, *frei-hals* “freedom”, *frijon* “love”, *freidjan* “to take care of”, *frijonds* “friend”, *friapwa* “showing love”; Old Icelandic *frjá* “to love”, *frjáls* “love”, *fríða* “to adorn”, *fríðr* “beautiful, handsome, fine”, *frændi* “kinsman”, *fríða* “to pacify”, *fríðr* “peace”, *fríðill* “lover”; Old English *frēo* “free; noble; joyful”, *frēond* “friend; relative; lover”, *frēod* “affection, friendship, good-will, peace”, *frēogan*, *frigan* “to free, to love”, *frēo*

“lady, woman”, *friodu* “peace”; Old High German *wīten* “to cherish”; Old Church Slavonic *prějǫ*, *prijati* “to be favorable”, *prijatelǝ* “friend”, *prijaznǝ* “love”; Latvian *priēks* “joy”.

- B. Proto-Afroasiatic *\*p[h]ar-/ʔp[h]ʔr-* “to be fond of, to care for, to feel affection for; to be pleased, happy, satisfied, or delighted with”: Proto-Semitic *\*p[h]ar-aḥ-* “to be glad, happy, delighted; to rejoice” > Arabic *fariḥa* “to be glad, happy, delighted; to rejoice; to be gay, merry, cheerful”, *farah* “joy, gladness, glee, gaiety, hilarity, mirth, exhilaration, merriment, joy”, *farḥa* “joy”, *fariḥ*, *fāriḥ* “merry, gay, cheerful, joyful, glad, delighted, happy”; Mehri *firəḥ* “to be happy”, *fərhāi* “happiness”, *fərh* “to make happy”; Jibbālī *fērəḥ* “to be happy, pleased”, *effrāḥ* “to make happy”, *farḥ*, *fərhāt* “happiness”; Harsūsi *fēreh* “to rejoice, to be happy”, *ferhēt* “happiness”, *fēreh* “to make happy”. Berber: Tuareg *ifrar* “to be good”. (?) Cushitic: perhaps Oromo *fira* “relative” (> Burji *fira* “friend, relative”; Gedeo *fira* “relative”), assuming semantic development as in Old Icelandic *frændi* “kinsman” or Old English *frēond* “friend; relative; lover”, cited above.
- C. Dravidian: *pari* “to be affectionate”, *pari* “love, affection”, *parivu* “affection, love, devotion, piety, delight, pleasure”; Malayalam *parivu* “love”; Kannaḍa *paraḷiga* “paramour”; Telugu *perima* “love, affection”.

Buck 1949:16.27 love (sb.; vb.); 16.71 good (adj.).

623. Proto-Nostratic *\*ḥat[h]/ʔḥət[h]-* “to tear, split, or break apart”:

- A. Proto-Kartvelian *\*xt[h]k[h]-* “to break, to burst, to split, to snap” (intr.): Georgian *xekt-* “to break, to burst, to split, to snap” (intr.); Zan *stik-*, *st'ik-* “to break, to burst, to split, to snap” (intr.).
- B. Proto-Afroasiatic *\*ḥat[h]/ʔḥət[h]-* “to split or tear off or apart, to shatter, to destroy”: Proto-Semitic *\*ḥat[h]-at[h]-* “to split, break, or tear off or apart; to shatter” > Arabic *ḥatta* “to wipe, to rub off; to peel, to shell; to strip leaves from a branch; to fall off”, *ḥitta* “piece, bit, morsel”, (reduplicated in) *ḥaṭḥata* “to fall off”, *ḥutra* “small piece, bit, morsel”; Jibbālī *ḥett* “to gnaw (as, for example, a mouse)”; Hebrew *ḥāṭaṭ* “to be shattered, to be broken, to be dashed to pieces, to be struck down; to be filled with terror”, *məḥittāh* “terror, destruction, ruin”. (Leslau [1989:248] also compares Geez / Ethiopic *ḥatata* “to search, to search out, to inquire, to question, to ask, to interrogate a witness, to investigate, to explore, to examine, to beseech, to scrutinize, to discern, to adjudicate”, assuming development from “to scrape, to break” to “to discern, to adjudicate” as in French

*trancher* “to cut, to settle”.) Proto-Semitic \**xat*[<sup>h</sup>]/-*ap*[<sup>h</sup>]- “to split, break, or tear off or apart; to shatter” > Aramaic *ḥəṯaṣ* “to seize, to tear off”; Syriac *ḥəṯaṣ* “to break, to shatter”; Hebrew *ḥāṯaṣ* “to seize, to snatch away”; Akkadian *ḫatāpu* “to slaughter”. Egyptian *ḥtm* “to perish, to be destroyed (intr.); to destroy (tr.)”; Coptic *hōim* “to perish”. Proto-Southern Cushitic \**ḥet*- “to plunder” > Iraqw *ḥet*-, *ḥit*- “to destroy”, *ḥitim*- “to be stunted”.

Buck 1949:11.27 destroy.

624. Proto-Nostratic \**q'ab*-/ \**q'əb*- “jaw”:

- A. Proto-Indo-European \**k'eb*[<sup>h</sup>]/- \**k'ob*[<sup>h</sup>]- “to munch, to chew; jaw”: Old Irish *gop* (Modern Irish *gob*) “beak, mouth”; German *Kebe* “fish-gill”; Lithuanian *žėbiu*, *žėbeti* “to munch”; Czech *žábra* “fish-gill”. The above Indo-European forms should thus be removed from etymology no. 288 (Bomhard—Kerns 1994:443—444), Proto-Nostratic \**k'ab*-/ \**k'əb*- “to seize, to take hold of; to seize with the teeth, to bite”.
- B. Proto-Kartvelian \**q'ba*- “jawbone”: Georgian *q'ba* “jawbone”; Svan *q'ab*, *hə-q'ba* “cheek”.

Buck 1949:4.207 jaw.

625. Proto-Nostratic \**q'an*-/ \**q'an*- “field, land, (open) country”:

- A. Proto-Kartvelian \**q'ana*- “(corn-)field”: Georgian *q'ana*- “(corn-)field, plowed field” (in Old Georgian, *q'ana*- means “earth”); Mingrelian *'vana*- “(corn-)field”; Zan *q'ona*-, *'ona*-, *jona*- “(corn-)field”.
- B. Afroasiatic: (?) Egyptian *qn* used as a designation for plants in a field.
- C. Uralic: Proto-Finno-Permian \**kentä* “field, meadow, pasture” > Finnish *kenttä* “field”; Lapp *gied'de* “meadow”; Votyak / Udmurt *gid*, *gid'* “stall, barnyard”; Zyrian / Komi *gid* “stall, stall for sheep, pigpen”.
- D. Sumerian *gán* “field”, *gán* “planting, cultivation”, *gána* “field, land, country, area, region”, *gán-zi*, *gán-zi-da* “cultivation, tillage”, *gán-zi<sup>sar</sup>* “a plant”.

Buck 1949:1.23 plain, field; 8.12 field (for cultivation).

626. Proto-Nostratic \**k'an*-/ \**k'an*- “jaw, cheek”:

- A. Proto-Indo-European *\*k'en-u-* “jaw, cheek”: Sanskrit (with secondary *h-* instead of *j-*) *hānu-h* “jaw, cheek”; Avestan *zānu-* “jaw, chin”; Greek γένυς “jaw, cheek”, γνάθος “the lower jaw”; Armenian *cnaut* “chin, jaw”; Latin *gena* “cheek, cheeks and chin”, (pl.) *genuae* “jaws”; Old Irish *gin*, *giun* “mouth”; Welsh *gen* “cheek, jaw”, *genau* “mouth”; Breton *gén* “cheek”, *gému*, *genaw* “mouth”; Gothic *kinnus* “cheek”; Old Icelandic *kinn* “cheek”; Old English *cinn* “chin”; Old Saxon *kinni* “jaw, chin”; Old High German *kinni* “jaw, chin”, *chinne* “jaws”; Lithuanian *žándas* “jaw”; Latvian *zuóds* “chin, jaw”; Tocharian A (dual) *śanw-e-m* “jaws”.
- B. Dravidian: Tamil *kannam* “cheek, ear”; Malayalam *kannam* “cheek, jaw”; Kannaḍa *kanna* “the upper cheek”.

Buck 1949:4.207 jaw; 4.208 cheek; 4.209 chin.

627. Proto-Nostratic *\*k'an-/k'ən-* “to press together, to compress; to be pressed or crowded together; to be thick, dense, fat, abundant, much”:
- A. Proto-Indo-European (*\*k'en-/k'on-/k'n-*) “to press together, to compress”: German *kneifen* “to pinch, to squeeze”, *Knorr* “knot”; Old Icelandic *knapp* “knob”, *kneppa* “to press, to hug”, *knía* “to knock, to strike”, *knoka* “to knock, to thump”, *knosa* “to bruise, to beat”, *knóða* “to knead”, *knútr* “knot”, *knýja* “to knock, to press; to drive onward; to struggle on, to press on”, *knykill* “small knot, protuberance”, *knylla* “to beat, to strike”, *knytt* “knotted, crippled”, *knött* “ball”; Norwegian *knast* “knot”; Swedish *knagg* “knot”; Old English *cnedan* “to knead”, *cnotta* “knot”, *cnocian* “to knock (at the door); to pound (in a mortar)”, *cnossian* “to dash, to strike”, *cnūwian* “to pound (in a mortar)”, *cnyssan* “to beat against, to dash against, to toss (storm...ship); to defeat, to crush (in battle), to overcome (temptation); to oppress, to trouble, to afflict”; Middle English *cnap* “knob”, *cnag* “knot, peg”, *cnarre* “knot”; Middle Dutch *knolle* “clod, ball”; Polish *gnębić* “to press, to squeeze”; Lithuanian *gnýbiu*, *gnýbti* “to pinch, to nip, to bite”. Two different stems should be set up for Proto-Indo-European: (1) *\*k'(e)n-* “to press together, to compress” and (2) *\*k'(e)n-* “to bend; to bend or fold (together); to crack, to split; to tie or bind together” (see below, replacement for etymology #311). Several of the derivatives of these two stems overlap semantically.
- B. Afroasiatic: Egyptian *qn-w* “much, many; very great”, *qn*, *qny* “to be or become fat”, *qn*, *qny* “fat”; (reduplicated) *qnqn* “to beat, to pound up (medicaments), to beat out, to flatten out”, *qnqnyl* “mallet” (?); Coptic *knne*, *keni* “to be fat, sweet”.
- C. Dravidian: Tamil *kaṇa* “to be heavy, stout, abundant”, *kaṇam* “thickness, heaviness”, *kaṇati* “thickness, heaviness, gravity”, *kaṇappu* “being stout”, *kaṇai* “to be crowded, intense”, *kaṇai* “density, abundance”, *kaṇaivu* “closeness, thickness”, *kaṇal* (*kaṇalv-*, *kaṇanr-*) “to be close, crowded, densely packed”;

Malayalam *kanam* “compact, hard”, *kanakka* “to become solid, hard, heavy”; Toda *ken* “densely (of shade)(in songs)”. The Dravidian forms are phonologically ambiguous and may go here instead of with etymology #313 (Bomhard—Kerns 1994:468), Proto-Nostratic *\*gʷan-/gʷən-* “to swell, to abound”.

Buck 1949:9.192 knot (sb.); 12.63 thick (in dimension); 12.64 thick (in density); 13.15 much; many.

628. Proto-Nostratic *\*k'an-/k'en-* “to complete, to finish”:

- A. Afroasiatic: Egyptian *qn* “to finish, to complete, to accomplish”; Coptic *kēn* “to cease, to finish”.
- B. Sumerian *gan* “to complete, to finish”.

Buck 1949:14.27 finish (vb.).

629. Proto-Nostratic *\*q'in-/q'en-* “to freeze, to be or become cold”:

- A. Proto-Kartvelian *\*q'in-* “to freeze”: Georgian *q'in-* “to freeze”; Mingrelian *'in-* “to freeze”; Laz *q'in-* “to freeze”; Svan *q'gən-, q'əgn-* “to freeze”.
- B. Afroasiatic: East Cushitic: Somali *qandood-* “to shiver”. Proto-Southern Cushitic *\*k'ant'-* “chill, chilliness” > Alagwa *qantsa* “rainy season”.
- C. Dravidian: Kolami *kinani*, *kinām* “cold”, Gondi *kinan*, *kīnd* “cold”, *kinnān* “wet, cool”, *kinnīta* “cold”.

Buck 1949: 15.86 cold.

630. Proto-Nostratic *\*gin-/gen-* “to be young, small, weak”:

- A. Afroasiatic: Egyptian *gnn* “to be weak, soft”, *gnnwt* “weakness” (?); Coptic *čnon* “to become soft, smooth, weak”.
- B. Dravidian: Toda *kin* “small”; Kannaḍa *kiṇkini beraḷu* “little finger”; Koḍagu *kiṇṇē* “boy”; Tuḷu *kinni* “small, young; the young of an animal, smallness”, *kinyavu* “the young of an animal, a little thing”, *kinyappē* “mother’s younger sister”, *kinyamme* “father’s younger brother”, *kinkana*, *kiṇkaṇa* “a little”, *kiṇṇṇu*, *kinaru*, *kinalu* “a bit, trifle”; Koraga *kinnige* “younger one”, *kinyo* “small”.
- C. Sumerian *gen* “small”, *genna* “child”, *genna* “young, small”, *gina* “heir, child, son”, *gina* “small, weak”, *ginna* “child”. (Sumerian loan-word in Akkadian *ginū* “infant, child”.)

Buck 1949:4.82 weak; 12.56 small, little; 14.14 young.

631. Proto-Nostratic *\*ban-/bən-* “to pour, to sprinkle, to drip”:

- A. Indo-European: Middle Cornish *banne*, *banna* “a drop”; Breton *banne* (Tréguier *bannec’h*) “a drop”. Not related to Sanskrit *bindū-ḥ* (*vindū-ḥ*) “a drop, globule, spot” (cf. Mayrhofer 1956—1980.II:430—431).
- B. Proto-Kartvelian *\*ban-* “to wash, to wash oneself”: Georgian *ban-a* “to wash”; Mingrelian *bon-* “to wash”; Zan (*m*)*bon-* “to wash”; Svan *li-br-āl* “to wash oneself”, *li-br-āl̄i* “to wash somebody, something”, *li-bār* “to wash (hands or face)”.
- C. Afroasiatic: Egyptian *bnn* “to overflow”, *bnbn* “to flow, to run”.
- D. Dravidian: Tamil *paṇi* “to be bedewed, to flow out, to be shed, to rain incessantly, to become cool, to shiver with cold, to tremble, to fear, to spring forth (as tears)”, *paṇi* “dew, chill, cold, tears, rain, mist, fog, haze, trembling, fear”, *paṇittal* “incessant rain”, *paṇukku* (*paṇukki-*) “to sprinkle, to moisten by sprinkling”; Malayalam *pani* “dew, fever”; *panekka* “to ooze”; Toda *pony* “dew”; Kannaḍa *pani*, *hani* “to drop; (n.) a drop (of water, dew, etc.)”, *haniku* “to fall in drops”, *hanisu*, *haṇisu* “to pour (as water)”; Koḍagu *pann-* (*panni-*) “to drizzle”; Tuḷu *pani* “drizzling rain”, *paṇi* “dew, fog, mist, snow”, *panipuni*, *paṇipuni* “to drizzle, to shower”.

Buck 1949:9.36 wash.

632. Proto-Nostratic *\*ʔaḥ-/ʔəḥ-* “cow”:

- A. Proto-Afroasiatic *\*ʔaḥ-/ʔəḥ-* “cow”: Semitic: Ethiopic / Geez *’aḥā*, *’aḥā* “cattle, cows”; Tigre *’aḥa* “cattle”; Tigrinya *’aḥa* “cattle”. Egyptian *iḥ* “bull”, *iḥt* “cow”; Coptic *ehe* “ox, cow”.
- B. Dravidian: Tamil *ā*, *ān* “female of ox”, *āyan* “herdsman”; Malayalam *ā*, *ān* “cow”, *āyan* “cowherd”; Kota *a-v* “cow”; Kannaḍa *ā*, *āvu* “cow”; Telugu *āvu* “cow”; Kurux *ōy* “cow”; Malto *ōyu* “cow, ox”.

Buck 1949:3.20 cattle; 3.21 bull; 3.22 ox; 3.23 cow.

633. Proto-Nostratic *\*c[h]aḥ-/c[h]əḥ-* “to crush, to pound, to grind, to beat”:

- A. Proto-Kartvelian  $*c[h]_I ex-$  “to pound, to crush; to stir, to mix”,  $*(s)a- c[h]_I exw-el-$  “mortar”: Georgian *ceḡ-vā* “to thresh”; Mingrelian *čax(v)-* “to stir, to mix”; Zan *čax(v)-* “to churn (butter)”, *čxvar-* “to thresh”.
- B. Proto-Afroasiatic  $*c[h]aḥ-/*c[h]əḥ-$  “to crush, to pound, to grind, to beat”: Proto-Semitic  $*c[h]aḥ-$  (extended forms:  $*c[h]aḥ-ak'-$ ,  $*c[h]aḥ-an-$ ,  $*c[h]aḥ-al-$ ,  $*c[h]aḥ-ag-$ ,  $*c[h]aḥ-ak[h]-$ ,  $*c[h]aḥ-aw/y-$ ,  $*c[h]aḥ-at[h]-$ ) “to crush, to pound, to grind” > Arabic *saḥaḡa* “to crush, to pound, to bruise, to pulverize; to annihilate, to wipe out, to wear out”, *sāḥiḡ* “crushing”, *saḥana* “to crush, to pound, to bruise, to grind; to smooth by rubbing”, *saḥala* “to scrape off, to shave off, to peel; to smooth, to make smooth, to plane, to file”, *saḥāla* “filings, file dust”, *saḥaḡa* “to scrape off, to shave off, to rub off; to graze, to abrade, to strip off”, *saḥata* “to extirpate, to annihilate, to root out”; Sabaeen *šḥt* “to destroy”; Harsūsi *seḥāk* “to crush, to grind fine”, *seḥāl* “to grind (a knife), to scratch”; Jibbāli *šḥaḡ* “to crush, to grind fine”, *šḥal* “to scratch, to grind (a knife)”; Mehri *səḥāk* “to crush, to mill, to grind fine”, *səḥāl* “to scratch, to grind (a knife)”; Ethiopic / Geez *saḥala* “to sharpen”; Tigrinya *səḥalā* “to sharpen”; Tigre *səḥla* “to sharpen”; Amharic *salā* “to sharpen”; Gurage *sala* “razor made locally”; Akkadian *sāku* “to pound, to crush”; Hebrew *sāḥāḥ* “to scrape”. (The Ethiopian forms may be loans from Arabic [cf. Leslau 1979.III:542].) Egyptian *šm* “to crush, to pound”. Faulkner 1962:238; Erman-Grapow 1921:167. Berber: Kabyle *ceqq* (<  $*c[h]aḥ-ak'-$ ) “to split; to be split, cracked”.
- C. Dravidian: Tamil *cāttu* (*cātti-*) “to beat, to thrash; (n.) beating, thrashing”; Kota *ca't-* (*ca'ty-*) “to give a blow, to beat”.
- D. Sumerian *sahar* “dust, sand, earth”.

Buck 1949:1.213 dust; 1.215 sand; 5.17 mix; 5.56 grind; 9.21 strike (hit, beat); 9.27 split (vb. tr.); 9.31 rub.

634. Proto-Nostratic  $*ʔaḥ-/*ʔəḥ-$  “young, tender; youth, young man, younger brother”:

- A. Kartvelian: Georgian *axali* “young, new, fresh”; Svan *m-ax-e* “new”, *m-ax-änd* “anew, again”, *m-ax-eḡwäž* “a brave man, a youth”.
- B. Proto-Afroasiatic  $*ʔaḥ-/*ʔəḥ-$  “young, tender; youth, young man, younger brother”: Proto-Semitic  $*ʔax-$  “brother, companion, friend” > Hebrew *’āḥ*

“brother, relative”; Syriac *’aḥā* “brother, friend, companion, associate”; Ugaritic *’aḥ* “brother”; Phoenician *’ḥ* “brother”; Eblaite *a-ḥu-um* “brother”; Akkadian *aḥu* “brother, colleague, associate”; Arabic *’aḥ*, *’aḥū* “brother, companion, friend”; Sabaeen *’ḥ*, *’ḥw* “brother”; Mehri *ḡā* “brother”; Soqotri *’ṣ’hi* “brother”; Jibbāli *’aḡā* “brother”; Ḥarsūsi *ḡā(h)* “brother”; Ethiopic / Geez *’əḥəw*, *’əḥw* “brother, blood relation, kinsman”; Tigre *ḥu* “brother”; Tigrinya *ḥaw* “brother”; Argobba *āḥ* “brother”; Harari *əḥ* “younger brother”. Perhaps Egyptian *iḥw* “weakness”, *iḥwn* “youth, boy”, *ḥwn* (< \**iḥwn* ?) “child, young man”, *ḥwn-t* (< \**iḥwn-t* ?) “maiden, girl”, *ḥwn* (< \**iḥwn* ?) “to be rejuvenated, refreshed”, *ḥwn* (< \**iḥwn* ?) “youthful vigor”. West Chadic \**ʔah(ya)*- “uncle; brother” > Kulere *ahy*- “uncle”; Warji *yahə*- “brother” (according to Orel—Stolbova [1995:7], Warji initial *ya*- is due to the influence of the second syllable). Central Chadic \**ʔaγ*- “son” > Musgu *aḥī* “son”. For the semantics, cf. Tamil *iḷa*, *iḷam*, *iḷai* “young, tender”, *iḷaimai* “youth”, *iḷaiṇān* “younger brother, lad, young man”; Malayalam *iḷa* “tender, young, weak”, *iḷama* “youth, tender age”, *iḷayavan* “young, younger”; (?) Brahui *iḷum* “brother”.

Buck 1949:2.44 brother; 14.13 new; 14.14 young.

635. Proto-Nostratic \**ban-/bən*- “to separate, to open”:

- A. Proto-Afroasiatic \**ban-/bən*- “to separate, to open”: Proto-East Cushitic \**ban*- “to separate, to open” > Somali *ban*, *ban-n-aan* “plain, plateau”, (causative) *ban-n-ay*- “to make room”; Bayso *ban*- “to open”; Oromo *ban*- “to open”; Konso *pan*- “to open”; Gidole *pan*- “to spread the legs”; Hadiyya *ban*- “to separate, to distinguish”; Gedeo *ban*- “to open”, *ban-em*- “to be open”, (adj.) *ban-ema* “open”; perhaps Burji *ban*- “to chase away”, *ban-df*- ~ *ban-’*- “to put to flight, to be defeated”, *ban-’-a* “defeat”, *band-am*- “to lose, to be defeated”. West Chadic \**ban*- “to open, to uncover” > Hausa *banye* “to open, to uncover”. Central Chadic \**ban-H-/byan-H*- “to open” > Mofu *baŋ*, *beŋ* “to open”.
- B. Uralic: Proto-Finno-Ugrian \**panče*- “to open” > Mordvin (Erza) *panžo*- “to open”, (Moksha) *pañže*- “to open”; Cheremis / Mari (Birk) *poča*- “to open”, (Kozmodemjansk) *pača*-, (Uržum) *poča*-, Ostyak / Xanty *punč*- “to open”; Vogul / Mansi (Tavda) *poonš*- “to open”, (Lower Konda) *puunš*-, (Pelymka) *punš*-, (Sosva) *puunš*-, (?) Lapp (Lule) (pred.) *buoʒʒot*, (attr.) *buoʒʒos* “naked”.



- C. (?) Sumerian *ban* “to choose, to select, to pick out” (?), assuming semantics as in Kui *aska* (*aski*-) “to separate from, to choose, to weed out, to select” (cf. Burrow—Emeneau 1984:33—34, no. 363).

Buck 1949:12.23 separate (vb.); 12.24 open (vb.).

636. Proto-Nostratic *\*b[u]gar-/ \*b[u]gər-* “to make a sound, to make a noise”:

- A. Proto-Kartvelian *\*bger-* “to make a sound”: Old Georgian *bger-* “to ring, to make a sound”; Mingrelian *ngar-*, *gar-* “to weep, to cry”; Zan *bgar-*, *mgar-* “to weep, to cry”.
- B. Afroasiatic: Egyptian *bgꜣw* “moan, cry, weeping, lamentation, sighing, groaning”.
- C. (?) Dravidian: Iruḷa *bugari*, *bugiriya* “large bamboo flute”; Alu Kuṛumba *buguri* “bamboo flute”; Pālu Kuṛumba *bugiri* “bamboo flute”; Kota *bugiṛ* “flute”; Toda *puxury* “Toda flute”; Kannaḍa *buguri* “Toda flute”.

Buck 1949:16.37 cry, weep.

637. Proto-Nostratic *\*bad-/ \*bəd-* “to totter, to waver, to be ready to fall; to become weak, tired, exhausted”:

- A. Proto-Afroasiatic *\*bad-/ \*bəd-* “to perish, to decay, to weaken; to become weak, tired, exhausted”: Semitic: Ethiopic / Geez (reduplicated) *badbada* “to perish, to disappear, to decay, to weaken, to get sick, to die, to get rusty”. Egyptian *bdš* “to become faint, weak, exhausted”, *bdšt* “weakness”. Highland East Cushitic: Sidamo *badar-* “to tire, to become tired”.
- B. Dravidian: Tamil *paṭu* (*paṭuv-*, *paṭṭ-*) “to perish, to die, to set (as a heavenly body), to rain”, *paṭu* (*-pp-*, *-tt-*) “to lay horizontally, to pave, to spread out (as bedding), to kill, to cast down, to fell, to lie down to sleep”, *paṭu* “base, low”, *paṭai* “bed, layer, stratum”, *pāṭu* “lying prostrate, fall, sleep, death, ruin, loss, disaster”; Kota *paṛ-* (*paṭ-*) “to lie down, to sleep”; Kannaḍa *paḍu* (*paṭṭ-*) “to lie down, to set (as the sun), to be spent (as the day), to have sexual intercourse, to die”, *paṭi* “downfall, ruin”; Kodagu *paḍ-* (*paḍuv-*, *paṭṭ-*) “to lie fallow”; Telugu *paḍu* “to fall, to lie, to recline, to sleep”; Naiki *paṛ-* (*paṭṭ-*) “to fall”, *parp-* “to make to fall”, *part-* “to fell (a tree)”; Parji *paḍ-* (*paṭṭ-*) “to fall, to sink down, to set (sun)”.

Buck 1949:4.82 weak; 10.23 fall (vb.).

638. Proto-Nostratic *\*bad-/bəd-* “hunger”:

- A. Indo-European: Lithuanian *bādas* “hunger, starvation”; Latvian *bads* “hunger”.
- B. Dravidian: Tamil *paṭṭini* “fasting, abstinence, starvation”; Malayalam *paṭṭini*, *paṭṭini* “privation of food, starvation”; Kota *paṭuṇy* “hunger”; Koḍagu *paṭṭaṇi* “starvation”.

Buck 1949:5.14 hunger (sb.).

639. Proto-Nostratic *\*biṭʼy-/betʼy-* “to press between the fingers, to squeeze, to crush”:

- A. Proto-Kartvelian *\*bičʼ-* “to break, to crumble”: Old Georgian *bičʼ-* “to crumble”; Svan *li-bečʼkʷ* “to break (apart), to burst”, *li-bčʼkʷe* “to split something”.
- B. Dravidian: Tamil *picai* “to work with the thumb and fingers in mixing, to knead, to squeeze or mash between the palms, to crush and separate (as kernels of grain from the ear), to rub or apply on the skin, to strike against one another (as branches in the wind)”, *picakku* (*picakki-*) “to press between the fingers, to squeeze, to crush”, *picaru* (*picari-*) “to mingle, to mix with the hand”; Kota *pick-* (*picky-*) “to squeeze, to pinch”; Kannaḍa *pisuku* “to squeeze, to press (as a fruit), to knead, to shampoo”, *hisi* “to squeeze (a ripe fruit) so as nearly to separate it into two pieces”; Tuḷu *piskuni*, *pīsuni* “to squeeze, to press”; Koraga *pijaṅki* “to crush”; Telugu *pisuku* “to squeeze, to press, to knead, to shampoo, to handle”; Naiki *pijg-* “to knead”; Parji *pīk-* “to crush”; Gadba (Ollari) *piskolp-* (*piskolt-*) “to squeeze”; Gondi *piskānā* “to knead flour”; Pengo *pīc-* (*pīcc-*) “to squeeze, to milk”; Kui *pīc-* “to press, to squeeze, to milk”; Kuṛux *pickaʼānā* “to press and bruise, to flatten by crushing”.
- C. Sumerian *biz* “to press or squeeze out (oil)”.

Buck 1949:9.342 press (vb.).

640. Proto-Nostratic *\*p<sup>h</sup>]itʼy-/p<sup>h</sup>]etʼy-* “testicle(s)”:

- A. Afroasiatic: Central Chadic *\*pičur-in-* “testicles” > Fali Jilvi *fčerin* “testicles”; Fali Mubi *fučuru* “testicles”. Orel—Stolbova 1995:70, no. 279, *\*bičur-/pičur-* “pudenda” (according to Orel—Stolbova, the original Central Chadic stem seems to have been *\*pičur-*). The Semitic material cited by Orel—Stolbova is too divergent phonetically and semantically to be related to the Chadic forms. On the

other hand, though not without problems of their own, the following may belong here: Arabic *faza*, *fazan* “womb”; Egyptian *pzdd* “testicles (of the god Seth)”.

- B. Dravidian: Tuḷu *picci* “the testicles of an animal”; Telugu *picca* “testicle”.

Buck 1949:4.47 womb; 4.49 testicle.

641. Proto-Nostratic \**c'am-/c'em-* “reed, grass”:

- A. Proto-Kartvelian \**c',em-* “reed, grass”: Georgian *ler-c'am-* “rush, reed”, *c'amali* “medicine”; Mingrelian (*r*)*č'em-* “pubic hair”; Zan (*n*)*č'am-* “medicine”; Svan *č'em* “hay”.
- B. Afroasiatic: Egyptian *dm'* “papyrus (book), papyrus (sheet or roll)”; Coptic *ḡōōme* “sheet, roll of papyrus, written document, book”.
- C. Dravidian: Tamil *campu* “elephant grass”; Kannaḍa *jambu* “a kind of reed or sedge”; Telugu *jambu* “a bulrush, sedge”.

Buck 1949:8.51 grass; 8.52 hay.

642. Proto-Nostratic \**dud-/dod-* “tip, point”:

- A. Proto-Kartvelian \**dud-* “tip, point”: Georgian *dud-* “tip, point; comb, crest (of a bird)”; Mingrelian *dud-* “head”; Zan *dud-* “crown, top of the head; top, summit, peak; tip, point”; Svan *dudūl* “breast, nipple”.
- B. Dravidian: Tamil *tuṭi* “lip”; Malayalam *coṭi* “lip”; Kota *tuc* “lip”; Kannaḍa *tuṭi*, *toḍi* “lip”; Tuḷu *duḍi* “lip, snout of an animal”; Koraga *toṇḍi* “lip”; Gondi *toṭi* “lip”; *toḍḍi* “mouth, face”; Kui *ṭōḍa* “lip”; Malto *toro* “mouth”, *toto* “beak”. (Semantic development from “beak, snout” to “mouth” to “lip” as in Czech *ret* “lip” in view of Russian *rot* “mouth”, Serbo-Croatian *rt* “promontory”, and Old Church Slavic *рътъ* “peak”.) Malayalam *tottu* “nipple”; Kannaḍa *toṭṭu* “nipple, point”; Tuḷu *toṭṭu* “nipple of a breast”. (Semantic development as in Svan *dudūl* “breast, nipple”.)

Buck 1949:4.24 mouth; 4.25 lip.

643. Proto-Nostratic \**daq<sup>[h]</sup>-/dəq<sup>[h]</sup>-* “sheep, ram, goat”:

- A. Proto-Kartvelian \**daq<sup>h</sup>*- “goat” (> \**dq<sup>h</sup>*- in Georgian, Mingrelian, and Laz through syncope; final -*a* in these languages is suffixal): Georgian *txa* “goat”; Mingrelian *txa* “goat”; Laz (*m*)*txa* “goat”; Svan *daqəl* “goat”.
- B. Dravidian: Tamil *takar* “sheep, ram, goat, male of certain other animals (yāli, elephant, shark)”; Malayalam *takaran* “huge, powerful (as a man, bear, etc.)”; Kannada *tagar*, *tagaru*, *tagara*, *ṭegar* “ram”; Tuḷu *tagaru*, *tagaru* “ram”; Telugu *tagaramu*, *tagaru* “ram”.

Buck 1949:3.25 sheep; 3.26 ram; 3.36 goat.

644. Proto-Nostratic \**Gaiʹy-/Gəiʹy-* “to bite, to chew”:

- A. Proto-Kartvelian \**Gečʹ-* “to chew”: Georgian *yečʹ-* “to chew”; Mingrelian *yačʹ-* “to chew”. Klimov 1964:202 \**yečʹ-*.
- B. Afroasiatic: Semitic: Akkadian *gašāšu* “to gnash the teeth, to bare the teeth, to rage”.
- C. Dravidian: Tamil *kaccu* (*kacci-*) “to bite, to gnaw, to nibble (nursery)”; Toda *koc-* (*koč-*) “to bite”; Kannada *kaccu*, *karcu* “to bite, to sting, to smart, to ache (as stomach)”, *kaccike* “biting”; Tuḷu *kaccuni* “to bite”; Kolami *kacc-* “to bite”; Parji *kacc-* “to bite, to sting”; Gadba (Ollari) *kas-* “to bite”, (Salur) *kacc-* “to sting”; Gondi *kask-* “to bite”, *kaccānā* “to gnash the teeth”, *kac-*, *kas-* “to bite”; Kui *kasa* (*kasi-*) “to bite, to sting”; Kuwi *kacc-* “to bite”; Malto *qaswe* “to eat greedily, to nip off with the teeth”.

Buck 1949:4.58 bite (vb.).

645. Proto-Nostratic \**Gitʹ-/Getʹ-* “armpit; to tickle”:

- A. Proto-Kartvelian \**Gitʹin-* “to tickle”: Georgian *γitʹin-* “to tickle”; Mingrelian *xicin-* “to tickle”; Zan *xitʹin-* “to tickle”. Klimov 1964:204 \**γitʹin-*.
- B. Dravidian: Tuḷu *kidukily*, *kid(y)kely*, *kidkily* “armpit, tickling”, *k. āpini* “to be tickled”, *k. māḍuni* “to tickle”; Maṇḍa *kiti ki-* “to tickle”; Kui *kitki lombeṛi*, *kāti kola* “armpit”, *kāti* “tickling”, *kāti āva* “to be tickled”, *kāti giva* “to tickle”, *kitkoroḍi* “armpit”; Kuwi *gidori kāli* “to tickle”, *gitori kīnai* “to titillate”.

646. Proto-Nostratic \**kʹud-/kʹod-* “to strike, to beat”:

- A. Proto-Kartvelian *\*k'od-* “to hew, to chop, to hack”: Georgian *k'od-va* “to castrate, to hew, to chop, to hack”; Mingrelian [*k'od-*] “to hew, to chop, to hack”; Zan [*k'od-*] “to hew, to chop, to hack”. Proto-Kartvelian *\*k'od-al-* “woodpecker”: Georgian *k'od-ala* “wood-pecker”; Mingrelian *k'ədə-, k'id-u* “woodpecker”; Zan *k'id-i, (m)k'ud* “woodpecker”.
- B. Proto-Afroasiatic *\*k'ad-/k'əd-* “to strike”: Central Chadic *\*kad-* (< *\*k'ad-*) “to strike” > Gisiga *kad, kid* “to strike”; Mofu *-kād-* “to strike, to kill”; Mafa *kad-* “to strike”; Muktele *kəddāi* “to kill”. East Chadic *\*kawad-* (< *\*k'a/wa/d-*) “to strike” > Migama *koodo* “to strike”. Cushitic: Beja / Beḍawye *kaḍaw* (< *\*k'ad-*) “to strike”. Orel—Stolbova 1995:334, no. 1535, *\*kad-/kawad-* “to strike”; Jungraitmayr—Ibiszimow 1994.I:7 *\*kd* “to beat” (= “to kill”), II:15, 213.
- C. Dravidian: Tamil *kuṭṭu (kuṭṭi-)* “to cuff, to strike with the knuckles on the head or temple”; Malayalam *kuṭṭuka* “to pound, to cuff”; Kota *kuṭ- (kuc-)* “to pound”; Toda *kuṭ- (kuṭy-)* “to knock, to pound”; Kannaḍa *kuṭṭu* “to beat, to strike, to pound, to bruise”, *kuṭṭu* “a blow, a pulverized substance”, *kuṭṭuvike, kuṭṭuha* “beating”; Koḍagu *kuṭṭ- (kuṭṭi-)* “to pound”; Tuḷu *kuṭṭuni* “to thump, to give a blow, to strike with the fist, to pound, to bruise”; Kolami *kuḍk- (kuḍukt-)* “to pound grain”, *kuḍkeng* “to knock on the door”; Naiki *kuṛk-* “to pound, to knock”; Parji *kuṭip- (kuṭit-)* “to punch, to knock (door)”; Konḍa *guṭ-* “to knock with the fist”; Kui *guṭ-* “fist”. (Note: these forms should be removed from etymology no. 342, Proto-Nostratic *\*k'wud-/k'wod-* “to strike, to wound, to hurt, to slay”, which should, perhaps, be rewritten as *\*k'wad-/k'wəd-*). Tamil *koṭṭu (koṭṭi-)* “to beat (as a drum, tambourine), to hammer, to beat (as a brazier), to clap, to strike with the palms, to pound (as paddy)”, *koṭṭu* “beat, stroke, drumbeat, time-measure”, *koṭṭāṇ, koṭṭan* “mallet”, *koṭu* “to thrash, to abuse roundly”, *koṭai* “blows, round abuse”; Malayalam *koṭṭuka* “to beat so as to produce a sound (as drum, metals, bells), to clap hands”, *koṭṭu* “beating a drum, clapping hands, buffet, knocking of knees against each other”, *koṭṭi* “mallet”, *koṭukka* “to flog”; Kota *koṭk- (koṭky-)* “to strike (with small hammer), knock on (door), to strike tipcat in hole in ground”; Toda *kwīṭk- (kwīṭky-)* “to tap (on door, something with stick)”, *kwīṭ fiṭ* “woodpecker”; Kannaḍa *koḍati, koḍanti* “a wooden hammer”, *koṭṭaṇa* “beating the husk from paddy”, *koṭṭuha* “beating”, *kuḍu* “to beat”; Koḍagu *koṭṭ- (koṭṭi-)* “to tap, to beat (drum)”; Tuḷu *koḍapuni* “to forge, to hammer”; Telugu *koṭṭu* “to beat, to strike, to knock; to strike (as a clock)”, *koṭṭu* “a blow, stroke”; Parji *koṭṭ-* “to strike with an ax”; Gadba (Ollari) *koṭ-* “to strike with an ax”; Gondi *koṭ-* “to cut with an ax”,

*koṭela* “mallet”; Pengo *koṭ-* “to thresh with flail”; Kuwi *koṭoli* “mallet”; Kuṛux *xoṭṭnā* (*xoṭṭyas*) “to break, to smash, to pierce, to break open”; Malto *qoṭe* “to break, to knock, to strike”, *qoṭure* “to knock, to dash against”.

Buck 1949:9.21 strike (hit, beat).

647. Proto-Nostratic *\*k'ud-/k'od-* “vessel, pot”:

- A. Proto-Kartvelian *\*k'od-* “vessel, carved from a single of piece of wood”: Georgian *k'od-* “vessel used for dry measures”; Mingrelian *k'od-* “vessel, carved from a single of piece of wood”; Zan *k'od-* “vessel used for dry measures”. Klimov 1964:114 *\*k'od-*.
- B. Proto-Afroasiatic *\*k'ad-/k'əd-* “vessel, pot”: Proto-Semitic *\*k'ad-aḥ-* “vessel” > Arabic *ḡadah* “drinking bowl, (drinking) cup, goblet, glass, tumbler, tea glass; keddah, a dry measure”; Sabaean *m-ḡdh(m, n)* “cup”; Ethiopic / Geez *ḡadho* “well bucket”, *ma-ḡdḡhi* “jar, jug, bucket”. Lowland East Cushitic *\*k'adad-* “vessel, gourd” > Oromo *k'adaada* “vessel, gourd”. Orel—Stolbova 1995:334, no. 1534, *\*ḡad-* “vessel”. Egyptian *qḏ* “pot”. Lowland East Cushitic *\*k'od-* “receptacle” > Oromo *k'odaa* “receptacle”. Southern Cushitic: Dahalo *k'oodo* “a kind of calabash”. West Chadic *\*kwaḏ-* (< *\*k'wad-*) “calabash” > Kirfi *kōḏō* “calabash” (Orel—Stolbova 1995:343 write *kwaḏo*); Gera *kwaḏa* “calabash”; Siri *k'āti* “calabash”. Central Chadic (with prefix *\*nV-*) *\*nV-k'wad-* “bottle” > Logone *ḡkooda* “bottle”. East Chadic *\*kwaḏ-* (< *\*k'wad-*) “pot” > Dangla *kōḏa* “pot”. Orel—Stolbova 1995:343, no. 1579, *\*k'od-* “vessel”; Jungraithmayr—Ibiszimow 1994.I:25 *\*k'wd/\*kwd* “calabash”, II: 56.
- C. Dravidian: (a) Tamil *kuṭam* “waterpot, hub of a wheel”, *kuṭaṇkar* “waterpot”, *kuṭantam* “pot”, *kuṭukkai* “coconut or other hard shell used as a vessel, pitcher”, *kuṭikai* “ascetic’s pitcher”, *kuṭuvai* “vessel with a small narrow mouth, pitcher of an ascetic”; Malayalam *kuṭam* “waterpot”, *kuṭukka* “shells (as of gourds) used as vessels, small cooking vessel with a narrow mouth”, *kuṭuka*, *kuṭuva* “small vessel”; Kota *koṛm* “waterpot with a small mouth”; Toda *kuṛky* “small pot”; Kannaḍa *koḍa* “earthen pitcher or pot”, *kuḍike* “small earthen, metal, or wooden vessel”, *guḍuvana*, *guḍāṇa* “large water-vessel (used also for storing grain); earthen pot used for churning”; Koḍagu *kuḍike* “pot in which food (especially rice) is cooked”; Tuḷu *kuḍki*, *kuḍkè*, *guḍke* “small earthen vessel”; Telugu *kuḍaka*, *kuḍuka* “cup, bowl, scoop, any cup-like thing”, *guḍaka* “a coconut or other similar

shell”, *guḍaka*, *kuḍaka* “shell of a fruit prepared to serve as a snuff-box, etc., a small metal box”, *kuḍalu* “small earthen vessels”. (b) Malayalam *kuttakam*, *kuttukam* “cauldron, large vessel with a narrow mouth (especially for treasure)”; Kodagu *kuttuva* “big copper pot for heating water”.

Buck 1949:5.26 pot.

648. Proto-Nostratic *\*k'u(n)G-/ \*k'o(n)G-* “gnat, mosquito”:

- A. Proto-Kartvelian *\*k'oGon-* “gnat, mosquito”: Georgian *k'oγo-*, *k'oγona-* “gnat, mosquito”; Mingrelian *k'oγo(na)-*, *k'oγunia-* “gnat, mosquito”; Zan *k'o(r)γon-* “gnat, mosquito”; Svan *k'oγon-*, *k'uγun-*, *k'əγən-* “gnat, mosquito”. Klimov 1964:114 *\*koγon-*.
- B. Dravidian: Kannaḍa *guṅgāḍa*, *guṅgāḍi*, *guṅgāṇi* “mosquito”, *guṅguru* “eyefly, mosquito, gnat”; Tuḷu *gugguru* “small insect infesting grain”; Kui *gungu* “a large wood-boring insect”; Kuwi *gongara viha* “a kind of mosquito”.

649. Proto-Nostratic *\*k'ut'-/ \*k'ot' -* “to be small”:

- A. Proto-Kartvelian *\*k'ut'u-* “small, little”: Georgian *k'ut'a-* “boy, lad, (male) child”; Mingrelian *k'ut'u-* “(child’s) penis”; Zan *k'ut'u-* “(child’s) penis”; Svan *k'ot'ōl* (adj.) “little”, (adv.) “a little”, *k'oč'ōl* (adv.) “a little”. Klimov 1964:118 *\*kuṭu-*.
- B. Proto-Afroasiatic *\*k'at'-/ \*k'ət' -* “to be small”: Proto-Semitic *\*k'at'-an-* “small, thin” > Hebrew *kāṭōn* “small, insignificant”, *kāṭān* “little, small”; Syriac *ḳəṭan* “to grow thin”; Mandaic *ḳoṭāna* “small”; Sabaeen *ḳṭn* “small”; Mehri *ḳáyṭən* “to become thin”; Jibbāli *ḳéṭən* “to become thin”; Ḥarsūsi *ḳáyṭen* “to become thin”, *ḳeṭīn* “thin”; Ethiopic / Geez *ḳaṭana* “to be thin, fine, lean, subtle, emaciated”, *ḳaṭṭin* “fine, thin, subtle, delicate, transcendent”; Tigrinya *ḳaṭānā* “to be thin”; Tigre *ḳaṭna* “to be thin”; Amharic *ḳaṭṭānā* “to be thin”; Argobba *ḳaṭṭāna* “to be thin”; Gurage *ḳaṭānā* “to be thin, slender, slim, lean, meager, skinny”. Central Chadic *\*kut'un-* “short, small” > Tera *kutun* “short, small”. Orel—Stolbova 1995, no. 1615, *\*kuṭun-* “to be small”.
- C. Dravidian: Tamil *kuttam* “smallness, young of a monkey”, *kuttan* “laddie, lassie (as a term of endearment)”, *kutti* “young of a dog, pig, tiger, etc.; little girl;

smallness”, *kuṭṭai* “shortness, dwarfishness”; Malayalam *kuṭṭan* “boy, lamb, calf”, *kuṭṭi* “young of any animal, child (chiefly girl); pupil of eye”, *kuṭu* “small, narrow”; Kota *kuṭ* “short, small”; Kannaḍa *giḍḍu*, *guḍḍu* “shortness, smallness”, *giḍḍa* “dwarf”, *guḍḍa* “dwarf, a boy; smallness, shortness”; Koḍagu *kuṭṭi* “child of any caste except Coorgs, young of animals (except dog, cat, pig)”; Tuḷu *giḍḍa* “small, short”; Telugu *giḍḍa*, *giṭaka* “short, dwarfish”, *guḍḍa* “child”; Kui *gūṭa* “short, dwarfish”, *gūṭi* “stumpy, short, shortened”; Kurux *guḍrū*, *gurrū* “dwarfish (of persons and animals only)”; Brahui *ghuḍḍū*, *guḍḍū* “small, urchin”.

- D. Sumerian *gud<sub>4</sub>-da*, *gud<sub>8</sub>-da* “short”.

Buck 1949:12.56 small, little; 12.59 short.

650. Proto-Nostratic *\*k'ud-/k'od-* “tail”:

- A. Proto-Kartvelian *\*k'ud-* “tail”: Georgian *k'udi* “tail”; Mingrelian *k'ud-eli* “tail”; Zan *k'ud-eli* “tail”; Svan *ha-k'wäd*, (Lower Bal) *ha-k'wed* “tail”. Klimov 1964:117 *\*kud-*; Schmidt 1962:120 *\*kod-*; Fähnrich 1994:222.
- B. Proto-Altaic *\*kudurka* “tail, crupper”: Mongolian *qudurqa* “crupper”; Kalmyk *χudγᠦᠳ* “crupper”; Old Turkish *qudruq* (< *\*qudurq* < *\*kudurka*) “tail”; Yakut *kuturuk* “tail”; Sagai *χuzurux* “tail”; Oirat *qujruq* “tail”.

Buck 1949:4.18 tail.

651. Proto-Nostratic *\*p<sup>[h]</sup>al-/p<sup>[h]</sup>əl-* “spleen”:

- A. Proto-Indo-European *\*(s)p<sup>[h]</sup>el-*, *\*(s)p<sup>[h]</sup>l̥-* (plus extensions) “spleen”: Sanskrit *plīhān-* “spleen”; Avestan *spərəzan-* “spleen”; Bengali *pilihā*, *pilā* “spleen”; Hindi *pīlhā*, *pilā* “spleen”; Armenian *phaycatn* “spleen”; Greek σπλήν “spleen”, (pl.) σπλάγχνα “the inward parts”; Latin *liēn* “spleen”; Old Irish *selg* “spleen”; Breton *felc'h* “spleen”; Old Church Slavonic *slězena* “spleen”.
- B. (?) Afroasiatic: Proto-Highland East Cushitic *\*hifella* “spleen” (if from *\*hi-fella*) > Hadiyya *hilleffa* “spleen”; Kambata *efeella* “spleen”; Sidamo *efelegg'o* “spleen”.
- C. (?) Proto-Finno-Ugrian *\*läppä* “spleen, milt” (assuming metathesis from *\*pälä* as in Panjabi *lipph* “enlarged spleen” and Hadiyya *hilleffa* “spleen”, cited above) >



Hungarian *lép* “spleen, milt”; Cheremis / Mari *lepə, lep* “spleen”; Votyak / Udmurt *lup* “spleen”; Zyrian / Komi *lop* “spleen”.

- D. Dravidian: Tuḷu *pallə* “spleen”; Telugu *balla* “enlargement of the spleen”; Parji *bella* “spleen”; Kuwi *balla, bella, bela* “spleen”.

652. Proto-Nostratic *\*k<sup>[h]</sup>juwan-/k<sup>[h]</sup>juwən-* “dog”:

- A. Proto-Indo-European *\*k<sup>[h]</sup>(u)wōn-/k<sup>[h]</sup>jun-* “dog”: Sanskrit *śván-* (nom. sg. *śvá, śuvá*; gen. sg. *śúnah*) “dog”; Greek *κύων* (gen. sg. *κυνός*) “dog”; Latin *canis* “dog”; Old Irish *cú* (gen. sg. *con*) “dog”; Welsh *ci* “dog”; Gothic *hunds* “dog”; Old Icelandic *hundr* “dog”; Old High German *hunt* “dog”; Old Saxon *hund* “dog”; Old English *hund* “dog”; Lithuanian *šuo* (gen. sg. *šūñs*) “dog”; Tocharian A *ku* (oblique *kon*) “dog”; Hieroglyphic Luwian *zú-wa/i-n(i)-* “dog” (this may be a loan from Indo-Aryan [cf. Kronasser 1956:229, §208]).
- B. Proto-Afroasiatic *\*k<sup>[h]</sup>əwan-/k<sup>[h]</sup>əwən-* “dog”: Proto-East Chadic (*\*k<sup>[h]</sup>əwán-* > *\*k<sup>[h]</sup>wán-* > *\*k<sup>[h]</sup>án-* >) *\*kanya-* “dog” > Dangla *kanya* “dog”; Jegu *kany-* “dog”; Proto-Omoti *\*kan-* “dog” > Ome *kana, kanaa* “dog”; Mao *kano* “dog”. Orel—Stobova 1995:311, no. 1425 Proto-Afroasiatic *\*kan-* “dog”. Proto-Berber (*\*k<sup>[h]</sup>əwón-* > *\*k<sup>[h]</sup>wón-* > *\*k<sup>[h]</sup>wún-* > *\*k<sup>[h]</sup>jun-* >) *\*kun-* “dog” > Guanche *cuna* “dog”; Proto-Omoti *\*kunan-* “dog” > Kaffa *kunano* “dog”; Mocha *kunano* “dog”. Orel—Stobova 1995:327, no. 1498 Proto-Afroasiatic *\*kun-* “dog”. Proto-West Chadic (*\*k<sup>[h]</sup>əwən-* > *\*k<sup>[h]</sup>juwen-* > *\*k<sup>[h]</sup>juHen-* >) *\*kuHen-* “dog” > Mogogodo *kwehen* “dog”; Fyer *kweeŋ* “dog”; Proto-Omoti (*\*k<sup>[h]</sup>əwən-* > *\*k<sup>[h]</sup>jewen-* > *\*k<sup>[h]</sup>jeHen-* >) *\*keHen-* “dog” > Dime *keenu* “dog”. Orel—Stobova 1995:328, no. 1511 Proto-Afroasiatic *\*küHen-* “dog”.

Buck 1949:3.61 dog. Illič-Svityč 1971— .I:361—362, no. 238, Proto-Nostratic *\*KūjnA* “wolf, dog”. Illič-Svityč also cites the following Uralic forms: Lapp *gáidne* “wolf”; Mordvin / Udmurt *kýjon* “wolf”; Cheremis / Komi *kejin* “wolf”. I have been unable to verify the existence of these forms on the basis of works available to me.

### 8.3. New Material to be Added to Existing Etymologies

313. Proto-Nostratic *\*gʷan-/gʷən-* “to swell, to abound”:

Kartvelian: Svan *gun* “very; plenty of”.

492. Proto-Nostratic *\*wir-/wer-* “to say, to speak, to tell, to point out, to make known”:

Afroasiatic: Egyptian (Demotic) *wšḥ* “message, matter, news”; Coptic *wō* “news, report”.

494. Proto-Nostratic *\*walʷ-/wəʷlʷ-* “to blaze, to shine, to be bright”:

Afroasiatic: Southern Cushitic: Proto-Rift *\*welah-* “to appear, to emerge into view” > Iraqw *welahat-* “to appear, to emerge into view”; K’wadza *wilit-* “to come out of hiding”.

541. Proto-Nostratic *\*manʷ-/mənʷ-* “to lust after, to desire passionately, to copulate, to have sexual intercourse, to beget”:

Dravidian: Tamil *māṇi* “penis”; Malayalam *māṇi* “penis”; Kannaḍa *māṇi* “penis”.

#### 8.4. The Following Etymologies Should be Replaced

26. PN *\*banʷ-/bənʷ-* “to join together, to fit together, to fasten, to twist together, to form or produce in any way” > PIE *\*b[h]en-d[h]j-/b[h]on-d[h]j-/b[h]n̥-d[h]j-* “to join together, to fit together, to fasten, to twist together, to form or produce in any way”; PAA *\*ban-/bən-* “to join together, to fit together, to fasten, to twist together, to form or produce in any way”; PD *\*paṇ-* “service, work, business; act, action; to make, to produce, to build”. The Dravidian material should be replaced with PD *\*piṇ-* “to unite, to tie, to fasten; to twist or twine together” (Burrow—Emeneau 1984:368—369, no. 4160) and PD *\*pinn-* “to plait, to braid, to twist together” (Burrow—Emeneau 1984:373, no. 4207), and the Proto-Nostratic reconstruction should be rewritten *\*binʷ-/benʷ-* to reflect the new material from Dravidian. Note that Ehret (1995:85, no. 19) reconstructs PAA *\*bin-* “to build, to create; (n.) house”.
311. Proto-Nostratic *\*kʷun-/kʷon-* “to bend or fold together, to crack, to split, to divide” should be replaced by Proto-Nostratic *\*kʷun-/kʷon-* “to bend, to bow; to bend or fold (together); to crack, to split; to tie or bind together” on the basis of the following:
- A. Proto-Indo-European (*\*kʷen-/kʷon-/kʷn-* “to bend; to bend or fold (together); to crack, to split; to tie or bind together”: Greek γνάμπτω “to bend”; German *knicken* “to crease, to bend, to fold, to crack, to break, to split, to snap, to burst”; Old Icelandic *kneikja* “to bend backwards with force”, *knytja* “to knit or tie together”, *knyta* “to knit, to fasten by a knot, to bind, to tie”; Old English *cnyttan* “to tie”, *cnyttels* “string, sinew”.
  - B. Proto-Kartvelian *\*kʷon-* “to tie or bind together”: Georgian *kʷon-va* “to wrap, to tie together, to bind up”, *kʷon-a* “bundle, bunch”; Mingrelian *kʷuno* (< *\*kʷono*) “creel”; Svan *li-čʷoni* “to wrap up”.

- C. Proto-Afroasiatic *\*k'an-/k'an-* “to bend, to bow; to be bent, curved, crooked”: Semitic: Arabic *ḵaniya* “to be hooked, aquiline (nose)”, *ʾaḵnā* “bent, curved, crooked, hooked”. Egyptian *qnb* “to bend, to bow, to incline (oneself); to subjugate”, *qnbt* “corner, angle”, *qni* “sheaf, bundle”; Coptic *knaaw* “sheaf” (< *qniw*).
- D. Dravidian: Tamil *kūṇ* “bend, curve, hump on the back, humpback, snail”, *kūṇu* (*kūṇi-*) “to curve, to become crooked, to bend down, to become hunchbacked”, *kūṇal* “bend, curve, hump”, *kūṇan* “humpback”, *kuṇi* (*-v-*, *-nt-*) “to bend (as a bow), to bow, to stoop”, *kuṇi* (*-pp-*, *-tt-*) “to bend (tr.), to stoop”, *kuṇi* “curvature, bow (weapon)”; Malayalam *kūnuka* “to stoop, to be crookbacked”, *kuni* “semicircle, curve”, *kuniyuka* “to bow, to stoop, to bend”, *kunikka* “to make a curve, to cause to stand stooping”; Kannaḍa *kūn* (*kūnt-*), *kūnu* “to be bent or bowed, to bend, to stoop; (n.) a hump”, *kunuṅgu* “to bend, to stoop, to crouch, to contract oneself, to shrivel up”; Gondi *gun-* “to bend”.

Buck 1949:9.14 bend (vb. tr.); 9.15 fold (vb. tr.); 9.16 bind (vb. tr.); 10.14 wind, wrap (vb.); 12.74 crooked.

148. PN *\*tʷ[h]awr-* “bull, steer” > PIE *\*tʰ[h]awro-* “bull”; PAA *\*tʷ[h]awr-* “bull, steer”.

This etymology should be removed — we are probably dealing with loanwords here.



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